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ABSTRACT

This handbook is designed to provide colleges and universities with initial guidance in establishing an appropriate system of indicators of undergraduate instruction, and to build on this foundation by cataloging a range of exemplary indicators of "good practice" that have proven useful across many collegiate settings. It provides a brief overview of the rising demand for performance indicators at all levels of higher education and discusses the properties of a good indicator, emphasizing the ways that such measures can be used and abused. The handbook provides a taxonomy of "good practice" domains according to which useful indicators can be developed, and discusses various data sources that institutions can use to construct indicators of the kinds described in the handbook. The bulk of the handbook consists of 65 suggested "good practice" indicators, each of which includes a brief definition, an explanation of its potential use and purpose, and the relevant data collection or calculational procedures required to produce it. (Contains 40 references.) (MDM)

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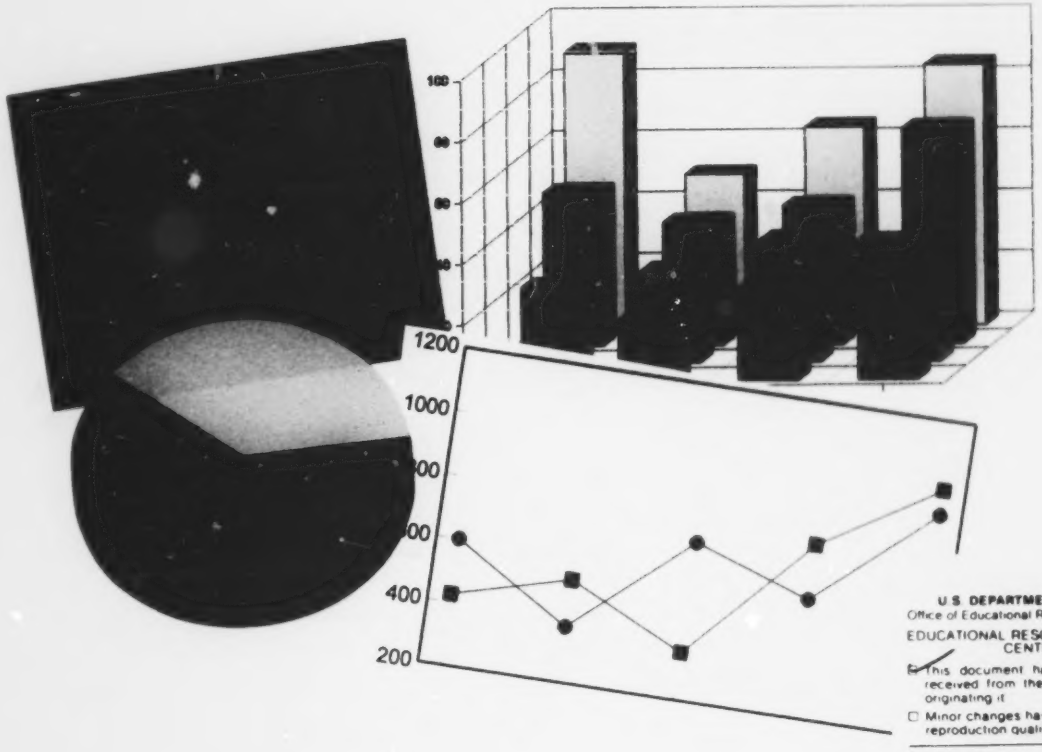
INDICATORS OF "GOOD PRACTICE" IN UNDERGRADUATE EDUCATION



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Indicators of "Good Practice" In Undergraduate Education: A Handbook for Development and Implementation

INDICATORS OF "GOOD PRACTICE" IN UNDERGRADUATE EDUCATION:

A HANDBOOK FOR DEVELOPMENT AND IMPLEMENTATION

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Dennis P. Jones

1996

National Center for Higher Education Management Systems (NCHEMS)

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Foreword and Acknowledgments

The NCHEMS core mission is to provide institutions and agencies of higher education with proven informational tools for planning, management and evaluation. This *Handbook* is designed to further that mission by extending the coverage of management information to the actual delivery of instruction. Like other NCHEMS publications, its contents are based on practical experience gained through direct consulting with institutions and in a range of research and development projects. Particularly to be acknowledged in the first category is recent work with Winona and Northeast Missouri (now Truman) State Universities, where many of the suggested approaches and measures were piloted. Prominent in the latter category are projects on accountability and performance indicators undertaken for the Education Commission of the States (ECS), the Colorado Commission on Higher Education (CCHE), and the U.S. Department of Education's Office of Institutional Research and Improvement (OERI). In addition, we want especially to thank C. Robert Pace whose excellent work in developing the College Student Experience Questionnaire originally inspired our efforts, and who gave us good advice on many occasions.

Because the *Handbook* is part of an ongoing developmental effort on instructional indicators, NCHEMS welcomes any additions to the Catalog that institutions may have tried, reports of experience in trying out such indicators, and additional suggestions for improvement. Please feel free to write or to contact us directly through our Web Page at http://www.nchems.com.

Chapter 1

Introduction and Overview

Under the changing internal and external conditions faced by most of those charged with the academic management of colleges and universities, a principal imperative is simply to know what is going on. Explosions in academic knowledge, together with growing pressure to respond to the multiplying demands of an expanding array of clients, have caused growing diversity in both curricula and instructional methods. The resulting size and complexity of today's "instructional delivery system" makes it far less easy to manage by touch and feel. At the same time, the need to stretch increasingly scarce resources across this expanding territory has led to equally pressing demands to do more with less. Here as well, the managerial need is for more and better information about how things are working, and how they might be made to work better. Information about instructional delivery is also fast becoming a centerpiece of public accountability. Pressed by both students and taxpayers, public officials are insisting that institutions report information that reflects what they are actually doing in undergraduate education and what students will get as a result, in addition to more traditional measures of instructional resources and investments.

Given these forces, growing interest in the topic of performance indicators as both tools for academic management and as key ingredients of a new accountability should come as no surprise. The purpose of this *Handbook* is to provide colleges and universities with initial guidance in establishing an appropriate system of indicators of undergraduate instruction, and to build on this foundation by cataloging a range of exemplary indicators of "good practice" that have proven useful across many collegiate settings. Chapter 1 provides a brief overview of the rising demand for performance indicators at all levels of higher education, and discusses the underlying management philosophy within which any set of institution-level indicators of academic practice ought to be developed. In the light of campus experience with assessment, the chapter also makes the specific case for developing indicators of undergraduate "good practice" in preference to more traditional resource-based and descriptive indicators of instructional delivery and as a supplement to information about effectiveness.

Chapter 2 discusses explicitly the properties of a good indicator, and emphasizes the ways such measures can be used and abused. Chapter 3 provides a taxonomy of "good practice" domains according to which useful indicators can in fact be developed, based on factors known through the research literature to be associated with collegiate achievement. Finally, Chapter 4 discusses various data sources that institutions can use to construct indicators of the kinds described in the *Handbook*, and provides suggestions about how to present such information and organize and archive the resulting database.

With these chapters as context, the core of the *Handbook* consists of a catalog of suggested "good practice" indicators. Organized in terms of the taxonomy suggested in Chapter 2, institutions are encouraged to adopt or adapt these sample measures in developing their own approaches. Each entry in the catalog describes the proposed measure by providing a brief definition, an explanation of its potential use and purpose, and the relevant data-collection and/or calculational procedures required to produce it. Each indicator so defined in the catalog has been piloted in the NCHEMS work with individual institutions, though no formal claims of validity or reliability can at this point be made. As a result, the primary intent of the catalog is to stimulate good thinking at the institutional level, and to provide a place for each institution to start in developing its own indicators approaches.

Why Indicators?

Escalating interest in performance indicators in higher education stems from a number of sources. A first stimulus is the fact that state and federal authorities—as well as institutional accrediting bodies—have in the last decade become far more specific in their demands for information. In the early to mid-eighties, such demands centered largely on the unexplored and controversial territory of academic outcomes (Ewell 1991). More recently, such demands have become more focused—centered prominently on the need to allocate scarce public resources and to inform individual "consumer choices" about which college or university to attend and about the specific experiences associated with attendance (Ewell 1994, ECS 1995). Two things have happened as a result. First, the external market for performance information has gradually expanded from an exclusive concern with outcomes to encompass questions of instructional practices as well. Second, the particular form in which information of all types has been requested by external actors has become increasingly terse and truncated—placing a premium on quantitative, easily-compared measures of condition or performance (Ruppert 1994). Taken together, these two phenomena have yielded a growing number of statistical "report-cards" for higher education, prepared by sources ranging from state governments to *US News and World Report*.

A second stimulus for the use of such indicators is internal. Faced with growing fiscal pressures, but unabated student demand, many colleges and universities are beginning to restructure and adopt management approaches based on the principles of Total Quality Management (TQM). Initially confined to administrative functions, TQM concepts (though with many caveats) are gradually finding their way into the academic arena (Seymour 1991, Sherr and Teeter 1991). In contrast to assessment's apparent emphasis on "inspection at the end," such approaches emphasize continuously gathering data about how "core processes" are actually working, and focus especially on the ways in which apparently different functions are supposed to fit together to achieve common ends (Ewell 1993). This emphasis is quite consistent with curricular reform themes of the last decade that stress coherence and integration among planned sequences of courses. But it also demands concrete information in order to actively monitor such connections and to determine where appropriate improvements can be made.

Indicators and Information-Based Management

Performance indicators must also be seen as part of a wider management philosophy—one that embraces goals, inputs, institutional activities, and outputs. Figure 1 emphasizes this relationship by

noting the specific manner in which each of these components is linked. Each linkage requires managers to possess sound information if the process is to be effective. As emphasized by the figure, overall effectiveness at any level of analysis within the institution depends upon an array of factors, and it is in many ways the **alignment** among them that must be monitored. If intended instructional goals are to be achieved, resources must be committed appropriately in the form of a budget, be appropriately allocated, and result in outcomes consistent with original intent. If any part of this evolving chain of management breaks, the achievement of intended results is unlikely—and simply knowing the ultimate result will tell the manager little about the particular stage in the process at which the failure occurred. An important consequence is that adequate indicator systems must reflect all four aspects of this generic management cycle.

The various informational components of the overall scheme represented by Figure 1, however, have developed unevenly. In fact, their evolution reflects both the capabilities of evolving data-collection technology and the issues that dominated higher education decisionmaking at various points in time. Thus the seventies primarily emphasized the development of costing and resource-allocation models and the design of expansion-oriented long-range planning approaches. Greater resource constraints in the late seventies and early eighties led to the additional development of program review systems designed to emphasize efficiencies, and to early concerns with educational outcomes and the assessment of institutional effectiveness. This movement, in turn, was more fully developed in the late eighties—a period concerned especially with the improvement of higher education's quality, especially in the realm of undergraduate education. All these topics are combined in today's management environment where "quality" remains expected by all, but at reduced cost and defined as much by higher education's "customers" as by colleges and universities themselves.

Across all these periods, however, a number of key concepts and analytical distinctions about linking information to decisions have endured. And these remain as valid in developing indicators of institutional good practice and performance as when they were first put forward some thirty years ago. Among these informational "first principles" are the following:

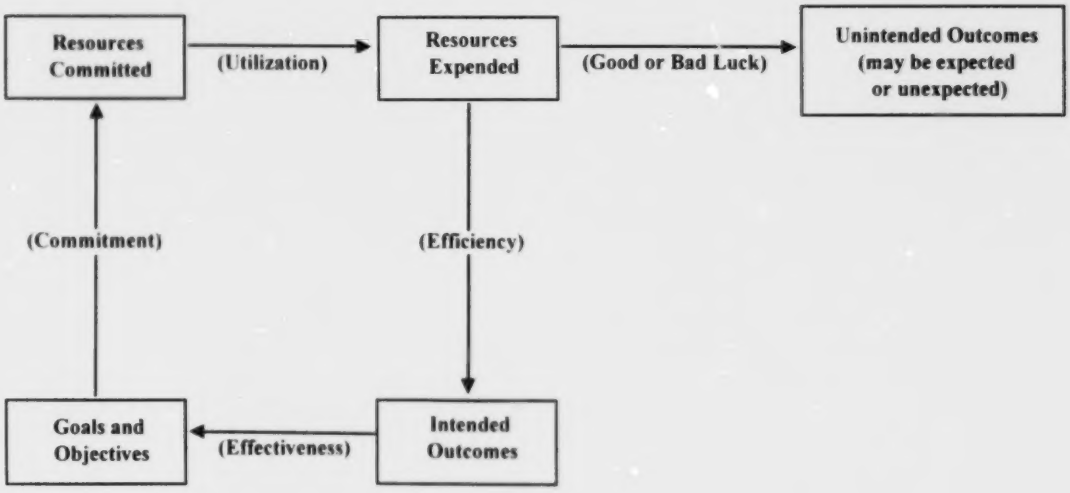
- **the distinction between data and information.** Though simple, this distinction is fundamental to any approach to management information (Jones 1982). One basic insight that underlies it is the consistent need to relate pieces of data—often drawn from quite different sources—in order to say anything meaningful about institutional condition or performance. As a result, most useful indicators are based on ratios or similar calculations which may be not only unfamiliar to many constituencies but which may also be technically difficult to construct.

- **cost/benefit.** "Performance" at any level requires examining inputs, activities, and outcomes together. It also requires explicit consideration of the multiple perspectives on each of these held by different constituents and stakeholders—especially who benefits and who pays. From an evaluative standpoint, this means carefully examining ratios of resources expended to particular units of activities undertaken and benefits received—and it is important to remember that many of the entities on both sides of this ratio may be non-material or at least non-monetary. From a planning perspective, moreover, it is important to provide clear linkages between information about performance and further resource investments. An important insight in both contexts is that useful indicators will virtually always be perspective-driven, and demand attention to the differing informational needs of different audiences.

- **a focus on functions and results as well as organizational units.** "Performance" and "good practice" at any level also tend to defy classification by organizational unit or traditional line-item budgetary categories. As a result, it is important to avoid adopting approaches to management information that are rooted exclusively

Figure 1

A Conceptual View of the Management Process*



* Expanded version of a framework developed by Leonard C. Romney, Robert F. Gray, and H. Kent Weldon. "Departmental Productivity: A Conceptual Framework." (Unpublished paper). Boulder, Colo.: NCHEMS, May 1978.

in existing organizational categories. The most useful approaches to system development instead center on the notion of defining goals (or intended good effects), then determining the degree to which defined objectives have in fact been obtained through the deployment of identified assets or as a consequence of undertaking particular activities. Units of analysis for describing good practices or for assessing performance are thus bounded by such categories as "objectives," "functions," and "processes" more than they are by particular actors or organizational units. For the construction of indicators, a primary implication that will be stressed throughout this *Handbook* is their use in **combination**—to present an overall picture of how things are functioning in different parts of an institution's overall system of instructional delivery.

- **choosing the proper unit of analysis.** A major conceptual trap embedded in the development of statistical indicators is that of suboptimization. The same piece of data may have quite different meanings at different levels of analysis, depending upon the configuration or function of the overall system. In the development of appropriate indicators of instructional delivery, this may be most strongly apparent in the need to distinguish among the appropriate performance domains of individual academic departments on the one hand, and those of such institution-wide functions as advising and general education on the other. The latter are not simply further aggregations of the former, but may require the specification of domain elements of quite different kinds. The same levels of "performance" on similar dimensions also may not mean the same things at different levels. From a systems perspective, for instance, institutional interests may not be well served by a set of departments that all define and maximize "quality instruction" entirely in self-defined ways.

- **emphasizing the linkage between information and its particular uses and users.** Information about "good practice" or "performance," moreover, makes little sense in the abstract. To be of value, it must be embedded directly in a visible management or decisionmaking process. This axiom seems close to simplistic, but it has profound implications for the properties of good information. One such implication is that the precision of the information required for management purposes is dictated principally by the parameters (and the risks associated with) a particular application or decision to be made. It is not therefore a strictly "methodological" question. A second implication is that any resulting indicator must have "face validity." That is, it must be perceived by the user as a relevant and appropriate measure of the phenomenon at issue, regardless of its technical properties. Finally, to be useful as an indicator, any piece of information should suggest what needs to be done in order to improve performance.

These themes have been present in most sound discussions of management information in higher education settings since the mid-sixties. For those attempting to develop good indicators they should remain living principles, applied flexibly and used in combination to meet particular management and measurement contexts.

Why Indicators of "Good Practice?"

Since about 1985, most discussions about information-based accountability and reform in undergraduate education have centered on the assessment of outcomes. While this focus has been both timely and appropriate given the paucity of such information, it has also encountered many drawbacks. Because of its visible linkage to accountability, of course, institutional resistance to assessment has been common. At the same time, the technical difficulties of establishing adequate and credible assessment systems are formidable, and frequently result in assigning assessment to technical specialists rather than those actively engaged in instruction and curricular development. Partly as a result, assessment at many institutions has all too often become a "train on its own track," with little real connection to either academic

policymaking or the improvement of teaching and learning.

Given this context, three particular difficulties that institutions have faced in implementing assessment are worth noting:

- **high costs and long timelines for developing appropriate assessment instruments.** After an initial encounter with standardized testing, most institutions embark upon a multi-year process of exploring alternative "performance-based" approaches. While innovative and ultimately beneficial, they have also found developing, validating, and piloting such assessments to be expensive and time-consuming. The technical properties of performance-based assessments are complex and in many cases unknown: standard validity and reliability measures are hard to apply and the results are often subject to unknown and uncontrollable biases. Growing experience with assessing student populations in specially-constructed settings, moreover, suggests that motivating students to participate and do their best may be a major problem (Banta and Associates 1993). These challenges are gradually being overcome, but for all too many colleges and universities the promised payoffs of outcomes assessment seem far down the road. Meanwhile, alternative sources of information about performance may be needed.

- **the need to gain consensus about instructional goals.** One of the most formidable challenges involved in assessment is forging real agreement about intended outcomes. Abilities like "critical thinking" or "problem-solving" prominently proclaimed in most institutional goal statements, are operationally ill-specified and can mean profoundly different things to academic and non-academic audiences (ECS 1995). As a result, such attributes can be operationalized in terms of quite different kinds of assessment approaches. As many have noted (e.g., Banta and Schneider 1988), the process of goal-development forced by the need to engage in assessment can itself be beneficial, and it is well worth the investment involved to bring it to a conclusion. But the process takes much time and commitment. In addition, it encounters an ongoing tendency to continually re-open discussions about the validity of the particular instruments chosen to operationalize such complex abilities, whatever they may be.

- **frequent inability to direct improvement.** Probably the most important drawback to using the results of outcomes assessments for improvement—despite their often sound construction—has been the difficulty of linking them to prior educational experiences that can be changed or improved by management action. Valid test scores can indicate rather precisely what has been accomplished and where specific deficiencies exist, but they often provide frustratingly little guidance about what can and should be done. And this limitation has proven particularly applicable to the kinds of broad-based, higher-order abilities frequently claimed as outcomes of undergraduate education.

These drawbacks have led many observers to recommend the development of additional data-gathering efforts centered on instructional practices and student experiences as an integral part of the assessment process (Pace 1984, Ewell 1996, Astin 1991). This case rests on two main grounds. First, such measures may provide important additional information which can help both academic managers and policymakers make sense of the findings of end-point assessments. If their general validity can be established, such indicators can not only "supplement" information derived from direct performance measures, but can be useful in their own right. Except as a pure benchmark of progress, it makes little managerial sense to collect outcomes information in the absence of parallel information on key processes that are presumed to contribute to the result. Colleges and universities, moreover, are especially in need of good information about educational contexts and practices because of their enormous variety. Not only do institutions of higher education exist in many forms with diverse educational missions, but unlike the situation typical of K-12 education, there is little curricular

commonality in the experiences of college students. **Given this situation, information on outcomes alone is virtually uninterpretable in the absence of information about key experiences.**

Second, a set of indicators tied to important institutional practices provides clear guidance for action. As noted, a major difficulty experienced by institutions throughout the brief history of assessment has been the relative lack of direction that its results provide about exactly where to invest resources in order to obtain desired results. More effective in causing meaningful change have been simultaneous approaches that focus on what institutions and faculty actually do. Prominent examples in recent years have been the "Seven Principles for Good Practice in Undergraduate Education" (Chickering and Gamson 1987) and "classroom assessment" techniques (Angelo and Cross 1993)—both of which have been widely adopted across many settings without substantial faculty resistance. Measures based on approaches such as these are likely to be of considerable value in determining the degree to which institutions and academic units are willing and able to act consistently in support of undergraduate educational practices that are both agreed upon by the wider academic community, and are known to work.

Evolving experience with using such indicators suggests that this original case is justified. Appropriate indicators of "good practice" that can be empirically related to desired collegiate outcomes and that can provide institutions with concrete directions for improvement are feasible and the technology needed to implement them is available (NCHEMS 1994). Their increasing use in academic settings testifies to their growing utility to academic managers when used for these purposes. The chapters that follow are designed specifically to help academic managers understand, design, and implement such indicators—especially in the realm of instructional delivery. And the accompanying catalog of potential indicators should in turn provide them with a concrete place to start.

Chapter 2

What Makes A Good Indicator?

The term "indicator" has been used for many years to describe a relevant, easily-calculable statistic that reflects the overall condition of an enterprise or the progress of a particular set of events (Burstein, Oakes and Guiton 1992). Among the most prominent national examples are the U.S. Department of Labor's unemployment rate and the U.S. Department of Commerce's report on Gross Domestic Product (GDP), both of which are used to assess the nation's overall economic health. Other familiar examples are in the field of health care. For example, the infant mortality rate is used internationally as a rough gauge of the effectiveness of the overall public health of a nation or culture. Indicators such as these have been developed for a variety of reasons, most of them also applicable to higher education. And many of the lessons learned about their use and abuse are equally applicable.

More recently, statistical performance indicators have been used in industry and health care to monitor and improve processes of manufacture and service delivery, largely because they can provide a reliable base for tracking and improving quality (Gitlow and Gitlow 1987). Examples here are varied, but include such measures as component failure rates for manufactured products, or cycle times for providing particular services or responding to customer requests. Many of these latter techniques are already beginning to be applied to such areas as student registration or business operations in college and university settings (Seymour 1991; Sherr and Teeter 1991).

To be useful as an indicator, a particular piece of data must communicate something important about what is happening in a complex domain. But to achieve this end it is not necessary for the statistic to be causally related to what it is intended to reflect. As noted, the infant mortality rate is commonly used as an indicator of the overall health of a nation or culture but it would not be appropriate to concentrate all resources on delivering prenatal health care in an attempt to improve this overall condition. Because of this, indicator statistics are often labelled "proxies" or "indirect measures" of condition or attainment, and caution in their use is advised. For similar reasons, indicators are most effective when used in combination. Indeed, the best of them are carefully constructed to provide mutually-

reinforcing measures that only together provide an accurate picture of what is occurring (Ewell and Jones 1994).

Some Attributes of Indicators

Like information in any form, such measures are good for some things and inappropriate for others. In general, experience suggests that indicators of instructional delivery are particularly useful for three main purposes:

- to quickly **compare** relative performances across units, institutions or settings.
- to monitor what is happening within a particular unit, institution or setting **over time**.
- to explicitly examine the **effects of intervention or policy change**—either across settings or over time.

Using indicators effectively also implies adopting a particular model of how effective management occurs. An indicators-based management approach first implies a conviction that it is legitimate for academic leaders to actively guide and restructure the academic enterprise in order to improve its performance. This conviction is only beginning to come into vogue in higher education and is strongly opposed to the traditional decentralized, often haphazard, administrative styles now typical of most college and university settings. Using indicators also implies adoption of a consciously incremental policy approach that stresses continuous improvement over one-time "quick fix" or "magic bullet" solutions. This in turn implies a rational approach to policy and resource allocation, characterized by the explicit use of concrete information in deciding what can and should be done. An important implication of this approach is that considerable management attention be directed toward how an institution's diverse instructional activities work together as a **system**—emphasizing, for instance, how their individual pieces interact, rather than using statistics more narrowly in an attempt to "micro-manage" the actions of individual units or subfunctions.

These attributes also imply some rather specific strengths and weaknesses of indicators as management tools—particularly in collegiate instructional settings. Some important advantages of indicators are that they:

- **can help mobilize concerted action.** Making goals concrete allows necessarily dispersed actions to be better aligned at all levels. Keeping track of known good practices such as the active learning experiences reported by students or the level of their out-of-class contact with faculty members, for instance, can send a much more explicit message to a collegiate community about what kinds of actions are expected of its members than simply encouraging them to be more "student centered."

- **can help the institution communicate its goals explicitly to potential students and the public.** Making intended outcomes and behaviors visible and concrete also allows the institution to better inform its "customers" about what it can deliver and what they can expect as a consequence. Providing information on the completion and occupational placement rates of former students, for instance, sends potential students a powerful message about effectiveness—especially if it is broken down by particular clienteles in a manner that allows them to make meaningful consumer choices about whether or not to attend.

- **can support and reinforce academic planning directed toward continuous improvement.** Institution-wide indicators about instructional effectiveness and delivery can help document what actions are needed and can help chart progress in meeting identified needs. Comprehensive data about the pass-rates in regular collegiate math courses for students completing remedial study for instance or the first-year dropout rates of minority students with identified incoming conditions can not only help to make the case for greater investment of resources to alleviate these conditions, but can also show explicitly the levels, kinds, and levels of utilization

of academic resources that will be needed to meet the remediation challenge across the entire institution.

Academic leaders should also realize that indicator systems also have important drawbacks as management tools. Some particular pitfalls include:

- **their tendency to create false incentives for action.** If the stakes associated with "poor performance" are high, faculty and unit-level administrators may act to maximize the numeric values of indicators without really changing what they do. Placing excessive emphasis on achievement test scores in examining learning outcomes, for example, can strongly induce faculty to "teach to the test" or may encourage individual academic programs to eliminate weak students before they are tested.

- **their tendency to focus attention on information-gathering itself, rather than action to change conditions.** Because performance measures are often technically complex and difficult to implement, excessive institutional effort may be spent on measurement issues that are not related to improving instruction. Initiating complex centralized data-collection systems to monitor student behaviors, for example, may require significant new institutional investments without eliminating the need for individual units and programs to maintain their own, often duplicative, assessment systems that are better suited to local requirements.

- **their frequent inability to tell outsiders what they really want to know.** By their very nature, indicators tend to be indirect. Through a well-designed indicator system, for instance, institution-level administrators may be able to monitor which programs are investing heavily and appropriately in educational good practice, what kinds of resources they are investing, and what many outcomes may be. But they probably will not be able to develop a reliable single indicator of the overall "quality" of the education that the institution provides that will respond to the diverse needs of many potential "customers."

Across all settings, moreover, important caveats are associated with the use of statistical indicators of any kind. First, indicators should not be used singly or in isolation. Instead, the most effective systems contain multiple measures that are designed from the outset to be mutually reinforcing. The information contained in a given indicator, moreover, almost always lies in comparison—of its value across different settings, at different points in time, or before and after intervention. Basing any conclusion on a single observation can be dangerous in the extreme.

The specific settings across which indicators are compared must also be sufficiently similar to allow meaningful conclusions to be drawn. In makes little sense, for instance, to directly compare the student retention rates of a community college and a selective liberal arts college because of substantial differences in assigned mission and student clientele. At the very least, additional indicators should be constructed that reflect these differences, so that they can be taken directly into account in interpreting performance (in the example noted, for instance, an additional indicator of entering student ability might be constructed).

Third, effective indicator systems should embrace multiple perspectives including those of the institution (or academic unit), students, and such external constituents as employers, elected officials and taxpaying citizens. Appropriate policy and concerted action designed to meet "customer needs" demands consensus among these various parties-at-interest about how goal achievement and effective practice will be explicitly recognized when it occurs. Often the same basic information must be communicated in the form of different indicators to inform different audiences with varying decisions or judgments to make. For example, an overall degree-completion rate may serve as one indicator of institutional performance, but it provides potential students with very little information about their own chances of graduating in the absence of far more specific information about the experiences of students like them.

For use in improving instruction, indicators are at their best when they are used to raise questions or to identify potential problems; they are less well

suited for rendering summative judgements about adequacy or performance. The primary emphasis should therefore be placed not on "policing" unit-level or individual performance, but rather on determining the strengths and weaknesses of the institution's system of instructional delivery as a whole. As a result, measures of "good practice" of the kinds described in this *Handbook* should always be accompanied by in-depth follow-up investigations, in order to determine what in particular should be done about any problems identified.

For use in informing external constituencies, in turn, indicators are at their best when used in combination to shed light on particular issues that may be uniquely associated with specific decisions or perspectives. The primary emphasis here should therefore be placed on determining more precisely what these decisions or perspectives may be and developing (and communicating) measures that respond directly to them. Prospective students, for instance, may prefer information focused especially on experiences typical of students like themselves, employers may be interested in specific curricular or pedagogical features related to their own workplaces, and legislators and boards more focused on broader institutional investments and engagement in effective instructional practices. As a result, "good practice" measures of the types described should always include careful consideration of who the specific audience is intended to be.

Like any policy tool, institutional indicator systems are no panacea. At the broadest level, their appropriate use demands careful planning and significant attention to how the resulting information is aligned with institutional values and directions. More particularly, crafting good indicators requires considerable attention to the specific incentives and disincentives for action that the resulting system creates at all levels of the institutional community.

Some Resulting Principles of Design

Given these many cautions, academic administrators should consider a number of explicit questions in designing indicators. A potential measure may look good on one dimension but possess severe handicaps on another. So long as its specific strengths and weaknesses are known, however, a "flawed" statistic may still be useful for purposes of policy or planning. If a posed set of indicators fails to meet too many such criteria, however, the result may be substantial future difficulties. In developing effective indicators, academic leaders must fully be aware of their specific properties, and must resist the common temptation to view every such statistic as equally valid and useful for all purposes.

The following design principles have proven appropriate in making such decisions across a wide range of settings. Taken together, they constitute a robust set of criteria against which any proposed set of indicators can appropriately be assessed:

- **leverage for action.** This criterion addresses the degree to which a given indicator provides concrete guidance about what should be done. Some indicators merely provide information about a present state or condition without providing much guidance about how to improve things; others will point toward specific practices that might be changed. A comprehensive assessment of collegiate-level communications skills administered to a sample of sophomores, for instance, may reliably indicate current levels of proficiency in written communication among students at this level across the institution. But it usually yields little information about what needs to be done to improve performance. In contrast, a statistic indicating the actual amounts of writing typically required in different academic majors and core courses, while it does not show proficiency directly, can provide faculty and department heads with much clearer direction about appropriate expectations.

- **vulnerability to manipulation.** This principle concerns the extent to which the numeric value of the indicator in question can change (or can be made to change) without any real alteration in what it is designed to measure. All such measures are to some extent vulnerable to manipulation, and their robustness should be highly prized. Where the consequences of obtaining "low" values on such measures are perceived to be considerable, there is considerable pressure to maximize

indicator values in any way possible, ignoring the actual practices that the indicator is supposed to reflect. As a result, systems of indicators should be designed to reinforce one another. At the same time, single indicators should be avoided—especially if their individual values can be easily influenced. Statistics on the proportion of instructional expenditures dedicated to delivering lower-division coursework, for instance, depend greatly on the ways individual courses are classified. If incentives to perform well on such indicators are compelling, departmental administrators will quickly identify those modes of classification that yield maximum indicator values and behave accordingly—regardless of what they may actually be doing.

- **credibility.** This property reflects the degree to which the informational content of a given indicator is likely to be considered trustworthy by a particular audience or user. In part, this is related to the informational source or method of data collection used. External audiences such as policymakers and prospective students, for instance, will find information provided directly by former students and employers considerably more credible than institution-generated statistics—especially if such information is collected by a "third party" agency. In part, however, this property is associated with the way particular measures are constructed. The best indicators for communicating with external audiences, for instance, are not only technically sound but "face valid"—that is, they not only measure what they are supposed to measure, but they **look** like they do and are thus far more likely to be believed than are equally valid statistics that lack this property.

- **ease of interpretation**. This property reflects the degree to which the indicator conveys a clear and consistent meaning to its intended audiences—both within and outside the institution. Some indicators are the result of complex statistical calculations that raise many issues for those unschooled in their interpretation. Others are transparent to most observers and can communicate readily to audiences drawn from a wide variety of backgrounds. Because their construction depends upon many prior assumptions, statistics on program completion, for instance, are notoriously complicated when compared to more straightforward information about enrollments or numbers of faculty. Which students should in fact be included in the denominator of the calculation—those who entered the program as freshmen, those who transferred into or out of it from other majors, or some combination? At the same time, many statistics commonly used as indicators lack consensus about what constitutes "good" performance. Above-average class sizes in a given department or program, for instance, might suggest high efficiency (presumably a good thing) as well as low learning effectiveness (presumably a bad thing). In contrast, the directionality of such statistics as the average number of hours-per-week that students report devoting to academic matters is straightforward. In short, effective indicators must be transparent to their intended audiences, with their definitions and grounding assumptions communicated clearly and publicly each time the indicator is used.

- **balance of perspective.** This criterion concerns the extent to which the indicator embodies the respective points of view of each of the many audiences to whom it is addressed. A good indicator system will contain information that is applicable to several levels of analysis (institutional, departmental, etc.), and will consist of statistics designed to reflect a range of client perspectives including the student, the instructional unit, and external audiences like taxpayers and public officials. A statistic on the employment rates of program-completers by field of study, for instance, can be summarized from the student's point of view as the probability of being placed in a rewarding job that in fact requires the skills he or she has learned, from the program's point of view as an overall placement rate within the occupation for which the program is designed to provide training, and from an employer's point of view as the proportion of needed jobs in particular skill areas that are filled each year. Because consensus is required for meaningful action, moreover, the contents of any indicator

system should stimulate active dialogue among the appropriate parties-at-interest in determining academic policy. Failure rates in basic engineering or science courses that require a knowledge of calculus by level of prior math performance, for instance, can provide an excellent starting point for conducting meetings between math and engineering faculty aimed at improving the design and delivery of prerequisite courses.

- **available benchmarks or standards for comparison.** This principle addresses the particular metrics or standards that will be used to chart progress or success when using the statistic in question. The meaning of **any** reported statistic comes only when its value is assessed against something else. But appropriate comparisons may vary considerably depending upon intended purpose. An indicator like the deployment of faculty time, for instance, can be first compared across all departments to determine (with appropriate caveats) relative differences in internal practice. But the same statistic might be charted over time for each department individually to show how deployment has changed. Third, such statistics might be compared to the average obtained across a range of nationally-identified peer institutions in order to establish the position of each with respect to what is typical for that type of institution. Finally, a fixed statistic might be chosen as a benchmark—perhaps using an existing "industry standard" commonly used by an external agency or accrediting body.

- **technical adequacy.** This criterion addresses the degree to which the indicator in question is reliable and valid as a piece of data in itself, and how robust it is under typical conditions of biased or missing data. The first of these conditions is often advanced as the only criterion of adequacy for such a statistic and it is, of course, important. But sacrifices in data quality are sometimes justifiable in order to obtain a measure that is notably superior on other criteria. The precision of the indicator should be sufficient to reliably inform action, and real actual decisions are rarely made on the basis of small differences in performance. Good indicators should also be designed so that they can operate under less-than-ideal measurement conditions, because these will surely occur. Complex, large-scale surveys of former students and their employers, for instance, may obtain only marginal response rates, and the consequences of differing rates of response on the accuracy of the resulting statistics should be carefully assessed in advance—again, in relation to the kinds of decisions to be informed.

- **data availability and ease of collection.** This final principle concerns the degree to which the proposed indicator is practically obtainable at a reasonable cost. Many otherwise promising indicator systems fail simply because they are too expensive, too complex, too time-consuming, or too politically costly to implement. Often, therefore, simple is best, even if it initially appears less technically attractive. Large-scale direct assessments of student ability, as currently practiced in K-12 environments for instance, are conceptually compelling as indicators—especially to constituents outside higher education. But designing and deploying such measures in postsecondary settings requires heavy initial resource commitments for instrument development and may equally require the expenditure of considerable political capital in order to overcome inevitable faculty resistance. Indirect indicators of curricular and teaching practice may be easier to collect and be just as useful for guiding appropriate action.

In sum, indicators work best to inform academic policy when a wide range of them are developed and when they are clearly related to particular uses and users. When employing indicators of any kind, moreover, it is important to consider the overall **patterns** that they suggest and not "zero-in" on small differences which may be the result of unimportant variations or simple chance. For academic administrators, systems of indicators are best equipped to initiate discussions about systemic improvement among faculty, staff and administrators on a more concrete basis. As industry has shown in adopting TQM, information is most valuable for improving practice when it serves as a concrete point of departure rather than being used

after-the-fact to point fingers about lack of progress and who might be at fault. At the same time, the best uses of indicators for external audiences like policymakers or prospective students will inform such constituents concretely and quickly about issues that are important to them and about the costs, benefits and consequences of the particular choices about higher education that they will have to make.

Good indicators can be designed to embrace both purposes. The best will help students, institutions, and policymakers at all levels recognize and take responsibility for their own actions and the consequences for others that these actions create. And as shown in many other enterprises, it is only when responsibility of this kind develops naturally that either real accountability or improvement can occur.

Chapter 3

Indicators of What? The Domains of "Good Practice"

To be effective as guides for improvement, institution-level indicators should be organized around a well-conceived and widely-held model of effective practice in undergraduate education. Not only does such a conceptual grounding help develop better campus understanding of the system's scope and intent, but it also makes it easier for those collecting and using individual indicators to see exactly how they are intended to fit together. Absent an overarching model of this kind, an indicator system will provide little guidance for improvement beyond maximizing each component individually, however well its particular pieces are designed. This chapter provides one such model, designed to emphasize "good practice" in undergraduate instructional delivery.

As attention to articulating common curricular outcomes increased throughout the eighties, so did concerns about effective instructional practices. Partly this was due to contemporary reforms in pedagogy that went beyond teaching to emphasize active, collaborative approaches to **learning**. Partly it was a natural consequence of wider assessment-for-improvement initiatives which quickly recognized that information about instructional processes and student experiences would be critical in making sense of any obtained data about outcomes (Astin 1991). The specifics of instructional "good practice," moreover, were given several powerful vehicles for dissemination throughout the eighties. A first such stimulus consisted of two well-publicized national reports—*Involvement in Learning* (NIE 1984) and *Integrity in the College Curriculum* (AAC 1985)—which emphasized such matters as active student learning experiences, frequent feedback on performance, and designed curricular coherence. A second influential document was *Seven Principles for Good Practice in Undergraduate Education* (Chickering and Gamson 1987), which not only succinctly codified many of these practices but also designed concrete inventories for assessing the degree to which they are actually found on college campuses (Gamson and Poulsen 1989). Growing interest in classroom

assessment (Angelo and Cross 1993) gave further impetus to these developments, as well as providing an additional set of "good practices" to count.

Specific Domains of "Good Practice"

"Good practices" within this rubric cover a range of instructional domains from the design and sequencing of curricula through the kinds of experiences that students actually engage in, and are grounded in a considerable literature on what works best for learning in collegiate settings assembled over the past three decades (Pascarella and Terenzini 1991). Twelve such attributes appear especially suitable for the development of useful indicators.

1. High Expectations

Research at both the K-12 and postsecondary levels has demonstrated that students learn more effectively when expectations are set at high but attainable levels, and when expectations are clearly communicated from the outset. When students are expected to take risks and to perform at high levels, they make greater efforts to succeed. Absent this kind of encouragement, they tend to choose "safe" learning alternatives that allow little room for developing their full potentials. In contrast to more conventional notions of "academic rigor," moreover, students should not be left on their own to reach set standards. Instead, both the institution and its faculty must actively work to help them succeed.

From the point of view of indicators development, a number of specific aspects of high expectations appear promising. First, such expectations must be consistently manifested throughout the institution in its curriculum, environment, and teaching practices. In the curriculum, for instance, high expectations can be communicated by practices like not awarding degree credit for remedial or non-collegiate work, by clear and enforced policies on academic good standing, and by visible requirements that both syllabi and program descriptions communicate expected outcomes. In teaching, high expectations are communicated by faculty themselves in the form of clear statements of expected performance provided early in each course, by examinations and exercises that require students to demonstrate higher-order cognitive skills rather than simple factual recall and by active efforts to help students attain established goals. In the wider academic environment, high expectations are communicated by campus activities that demonstrate and reward academic excellence, by policies that encourage students to enroll in advanced courses outside their major fields, and by policies that encourage students to finish the courses in which they initially enroll and to persist in general.

2. Coherence in Learning

Students also succeed best in developing valued higher-order skills when such skills are reinforced throughout their educational programs. This means, at minimum, that students' learning experiences should consist of more than merely a required number of courses or credit hours. Instead, the curriculum should be structured in a manner that sequences individual courses to reinforce common outcomes and that consciously directs instruction toward collective ends.

More specific aspects of coherence suggest some particular directions for developing useful indicators. In curricular design, coherence is manifested in required course structures and sequences, particularly in general education. To achieve coherence, courses should be intentionally interrelated in coverage and expectations, with key learning objectives built in throughout. In teaching practice, moreover, faculty should encourage students to actively make connections among courses, disciplines, and fields of knowledge—either by systematically using material from other courses and settings as examples or by encouraging students to create projects that relate two or more courses. Finally, the campus environment itself should encourage coherence by providing multiple opportunities for students to make connections among major academic themes—for example, through lecture series or cultural events.

3. Synthesizing Experiences

Students also learn best when they are required to integrate knowledge and skills. Typically where this occurs in baccalaureate curricula, it involves a senior seminar, project, external examiner, or thesis that requires a synthesis of knowledge and a demonstration of independent inquiry or application—a curricular feature that generally occurs (if at all) at the end of a major program. But such experiences are appropriate at multiple points in a student's career, and should not be confined to either upper-division or baccalaureate programs.

Following this logic, specific indicators might fruitfully be based on a number of features. In curriculum design, the existence of "capstone" or integrative experiences as a requirement for graduation often suggests institutional commitment to this principle. In teaching practice, moreover, the principle is reflected in the degree to which faculty visibly require students to demonstrate the ability to connect key concepts and relate appropriate skills. Finally, in the wider institutional environment, students should actively seek such opportunities for synthesis in projects that they undertake on their own.

4. Integrating Education and Experience

Classroom experiences are both augmented and reinforced by multiple opportunities to apply what is learned. In professional curricula, opportunities to actively apply skills in this manner are often the norm, and include formal practice, internships, or cooperative education arrangements. But such opportunities are generally lacking for more traditional disciplines or for undergraduate education as a whole.

Particularly suitable for guiding indicators development here are curricular designs that require all students to complete an internship or similar experience as an integral part of their programs. And rather than being entirely independent activities, these experiences should be directly and formally related to classroom work. Where appropriate, curricula consistent with this principle also allow degree credit to be awarded for planned, education-related work experience. In teaching practice, faculty should refer consistently to work-related or practice-oriented applications of their subjects. Often, the best examples of this occur when faculty "model" their own work in the classroom. Work-related practice can further be reinforced by rethinking policies regarding student assistance—emphasizing, for example, the role of college work-study as an alternative to more conventional forms of financial aid. Finally, the institutional environment itself should provide multiple opportunities for students to engage in education-related work, even when there is no programmatic requirement that they do so.

5. Active Learning

At all levels, students learn best when they have multiple opportunities to actively deploy their skills. Rather than relying exclusively on instructional settings that emphasize passive listening in introductory classes, this principle implies frequent discussion of presented class material, considerable written work, and the application of learned material to new settings or contexts. At the same time student assessments, rather than being based entirely on information recall, should require active demonstration of synthesis and application.

These attributes suggest a number of possibilities for developing indicators. In curricular design, they imply that a significant number of classes should be small or be structured in a manner that allows active interchange to occur among students and faculty. In the classroom, faculty should use pedagogical techniques that require students to become actively engaged, such as structured discussion, frequent writing, independent projects or other applications-related exercises and information-gathering tasks. Finally, the institutional environment should provide multiple opportunities for informal interchange to occur among students in discussing class material, as well as between students and faculty members.

6. Ongoing Practice of Learned Skills

A common research finding in both K-12 and postsecondary study is that unpracticed skills quickly atrophy. This is especially the case with core skills like computation and writing which, if not reinforced, will inevitably deteriorate. Good practice consistent with this principle requires the provision of multiple opportunities for students to exercise such valued higher-order skills as communication (written and oral), critical thinking and problem-solving, or basic quantitative techniques. It also requires that students demonstrate such skills at appropriate levels as a condition of graduation.

Indicators consistent with these principles center particularly on attributes like the following. First, curricular designs should reflect a need to practice and reinforce identified core skills throughout the curriculum, instead of the development of particular skills being made the sole responsibility of specific departments or courses (e.g., assuming that an English Composition course, or the English Department in general, is entirely to blame if students graduate without valued writing skills). Furthermore, curricular requirements should be designed so that students cannot avoid classes that enhance or develop these skills. Second, faculty must require a significant amount of such practice in classroom assignments—especially in writing and quantitative reasoning. Indeed, the notion of practice of this kind should be internalized as a primary element for certifying mastery. Finally, the institutional environment in general should foster student exercise of basic academic skills through clubs and associations, discussion and study groups, and similar activities.

7. Assessment and Prompt Feedback

Frequent feedback to students on their own performance is also a major contributor to learning. Typically in college classrooms, students receive little formal feedback on their individual work until well into an academic term. Consistency with this principle demands that institutions pay far greater attention to providing students with information about their own performance—both within formal coursework and through advisement and other experiences that give students an opportunity to assess more broadly what they have learned. At the same time, early classroom assessment allows faculty to determine the many levels of student ability and variety of backgrounds that may be present in a given classroom, and can suggest some strategies for dealing with this diversity.

An especially wide range of specific manifestations of this "good practice" is suitable for the development of indicators. In curriculum and academic policy, consistency with this principle demands early assessment of students' abilities on entry to college and an active effort to remediate identified deficiencies. In course and curricular designs, students should be required to demonstrate their skills in short exercises throughout the term, rather than only on a mid-term or final examination. In teaching practice, consistency with this principle demands quick "turnaround" of assignments, and assessments of student performance that identify individual weaknesses and how these might be improved. At the same time, through such techniques as classroom research, faculty should actively monitor how the class as a whole is progressing and what needs greater emphasis, and make modifications accordingly. Finally, in the wider environment, students should be encouraged to take classes that will help them to strengthen weak areas, not just reinforce areas in which they are already strong. Similarly, the institutional environment should encourage student self-assessment at every level—allowing students multiple out-of-class opportunities to test their skills through peer assessment (e.g., through the use of study groups), or by providing facilities like self-paced learning laboratories or study centers.

8. Collaborative Learning

Students learn better when they are engaged in a team effort rather than being entirely on their own. Working with others increases involvement and provides multiple opportunities for feedback. At the same time, it reinforces communication and problem-solving skills. At least as important in

fostering skills of working together is modeling how the world outside the classroom works—a world increasingly based on teams and work groups that students will soon face. Research also suggests that collaboration is a useful model for faculty/student interaction. Rather than being solely a judge of student performance, the best teachers act as "coaches," working with students as joint participants in achieving a common goal.

Useful indicators can be developed for many specific aspects of this domain. In the realm of curriculum, courses and programs should be designed to incorporate group projects accomplished both within and outside of class, and classes themselves should be structured to promote such interaction. At the same time, instructors should use pedagogical techniques that require students to interact with one another, often in the context of group research projects or problem-solving exercises. Finally, the campus environment should be organized to foster and sustain informal collaborative activity in academic areas such as study groups and academically-related clubs and organizations.

9. Significant Time on Task

Not surprisingly, research also confirms that greater amounts of time invested in learning yield greater payoffs in terms of what and how much is learned. Consequently, how an institution defines its expectations of the ways students and instructors should use their time can powerfully influence the quality of learning that occurs. At the same time, visibly emphasizing time on task helps students learn how to plan more effectively, to manage their time, and to focus their energy.

Time on task is especially well-suited to the development of useful indicators. In the curriculum, consistency with this principle suggests course designs that allow adequate time for practicing skills (for example, laboratories and workshops) in addition to the time set aside for more formal instruction. It also suggests more directive approaches shaping students' use of out-of-class time to achieve educational objectives. Similarly, it suggests that faculty should themselves devote significant time to the task of undergraduate instruction including (in addition to classroom instruction and preparation) substantial office hours, out-of-class contact with students, and scholarship related to teaching in their disciplines. Finally, the campus environment should be deliberately structured to enhance greater time on task by encouraging students to spend out-of-class time on academic rather than social and other pursuits. Study spaces should be available and well-used in the library, residence halls and other public areas, and there should be mechanisms available such as living/learning communities to facilitate group study and other collaborative efforts.

10. Respect for Diverse Talents and Ways of Knowing

Students come to college with vastly different backgrounds, levels of preparation, and kinds of previous experience. And regardless of background, different students may learn effectively in quite different ways. Good practice demands carefully designing curricula and instructional practices to meet this expected variety. Diversity, moreover, can itself be of instructional value. Not only should individual ways of knowing be respected and students be allowed to capitalize on their individual strengths, but diversity should also be harnessed for the insights it can provide on the subject matter being taught. Instructional approaches that actively tap prior student and faculty experiences, and that highlight the differences in these experiences, can be particularly effective.

Many specific aspects of this domain suited for indicators development are available. In the curriculum, consistency with this principle means that students should be able to create programs that play to their strengths, especially in lower-division courses. One implication may be that the student's first year not be devoted solely to conceptual introductory coursework, but contain also the kinds of "hands-on" courses typically taught later in a curricular sequence. At the same time, faculty should focus on teaching methods that are receptive to a full range of student learning styles and operations—for instance, emphasizing practical

applications in conceptual courses and emphasizing connections with theory in applied courses. Finally, the campus as a whole should actively support diversity in both its programs and its behavior. Students of diverse backgrounds ought to interact actively and informal mechanisms should be available for students to learn from one another.

11. Frequent Faculty-Student Contact

Considerable research suggests that frequency of out-of-class academic contact between faculty and students is strongly associated with both program completion and effective learning. Knowing a few faculty members well enhances students' intellectual commitment and encourages them to think about their own values and future plans. At the same time, through such contact students are able to see faculty less as experts than as role models for ongoing learning.

Developing indicators of frequency of faculty-student contact appears promising in a number of areas. In the curriculum, it can be enhanced by designs that emphasize occasions for contact as well as simply time on task—for example, scheduling three one-hour class meetings in preference to one three-hour session. In parallel, classes should be small enough or be explicitly structured to promote informal interactions between instructor and student. Faculty, in turn, ought to have opportunities to interact more frequently with students in such out-of-class settings as learning communities or recreational activities. Finally, the campus environment should be structured so that informal interaction is actively encouraged throughout the campus in the design and location of faculty offices and through the provision of informal meeting and study spaces in residence halls and other public areas.

12. Emphasis on the Early Years of Study

Consensus is emerging that the first years of undergraduate study—particularly the freshman year—are critical to student success. Partly this is because the transition from high school to post-secondary study represents for most students a major discontinuity in both expectations and behavior. Not only are standards typically higher, but students also are expected to work independently and to make significant independent choices about their individual courses of study. For adult students returning to the unfamiliar world of postsecondary study after many years, the shock of transition can be particularly abrupt. Yet the pattern of resource investment at most colleges and universities strongly favors upper-division work. At the same time, comprehensive efforts to integrate first-year students into the mainstream of the collegiate experience are often treated as auxiliary enterprises, unconnected to the faculty and to core academic experiences.

Emphasis on the early years can be manifested specifically in a number of ways. In the design of the curriculum, such emphasis implies re-examining introductory courses to make them more than simply first courses in an anticipated disciplinary sequence in the major. Similarly, typical curricular designs that emphasize rigid progression from general education in the first two years to in-depth study should be critically examined to ensure that students are not being lost because they are forced to take courses that they see as irrelevant to their goals. Faculty, in turn, should be invested more heavily in the first years of study. This means not only staffing introductory courses with regular (and preferably senior) faculty, but also more fully involving departmental faculty in freshman-year advising and experience programs. Finally, ensuring the success of first-year students should be visibly stressed as a campus-wide priority. Targeted activities such as Freshman Year Experience Programs should be consistently reinforced by a campus environment in which all personnel—academic and non-academic—are demonstrably committed to the common goal of improving first-year student retention and performance.

Some Cross-Cutting Indicator Domains

"Good practices" of these kinds can be manifested in many different ways in a given institution or program. As Stark and others (Stark and Lowther 1986) have pointed out, institutions may possess multiple "curricula" operating in parallel that may have little to do with one another in content, coverage, or effectiveness. For purposes of indicators development, it is often useful to conceive of these distinct "curricula" systematically to determine specifically whether or not particular features are present. Doing so results in some additional domains for guiding indicators development, which cut across the kinds of "good practices" described in the previous section.

- **institutional and program requirements.** Indicators in this class address the degree to which curricular and other educational requirements contain particular structural features. Consequently, they address what can be called the "designed curriculum," consisting primarily of catalogs and syllabus descriptions. This particular "curriculum," of course, tends to dominate faculty attention, regardless or whether it has reality in practice. While increasingly recognizing explicit learning outcomes as part of the design, the bulk of attention remains focused here on course content and sequence as defined by institutional or departmental policy.

  A deeper and less commonly-undertaken look at curricular design, moreover, can be labelled the "expectational curriculum." This consists of the specific assignments and levels of performance expected of students and the manner in which student performance is assessed. At the same time, it reflects what is typically the student's view of a given curricular design—based not on course content but rather on the specific requirements that must be met and the levels of performance needed to meet them. Examining expectations in this manner can be highly revealing; a stated objective of the general education curriculum, for instance, may be to develop students' oral communications proficiency, while an examination of actual required performance across general education courses reveals that students are rarely asked to demonstrate this proficiency and are never evaluated on it.

- **instructional delivery.** Indicators in this class are designed to address the degree to which particular instructional behaviors and settings actually occur, regardless of the original design. Consequently, this domain addresses what can be called the "delivered curriculum," consisting of what faculty actually teach and the consistency with which they do so. In contrast to design, this "curriculum" is behavioral, and may vary significantly across classrooms and from original design specifications. In addition, for any established curriculum, the phenomenon of "course drift" occurs. As new faculty teaching assignments to a given course are made, both content and teaching methods may vary increasingly from the vision embodied in the original design. Similarly, significant unintended variation may occur from section to section in a multi-section course. Typically, institutions know very little about the extent and impact of such variations beyond simply acknowledging that they occur.

- **student experiences.** Indicators in this class address the degree to which students actually engage in particular learning behaviors—both in and out of class—that are associated with particular outcomes. As such, it is centered in what can be termed the "experienced curriculum," consisting of what students really do. This curriculum also is behavioral and can usefully be divided into two quite different components. One concerns student coursetaking patterns—especially when these occur within a given distributional or elective design. Formal structure may prescribe particular arrays of courses that meet specific requirements, but how do different kinds of students in fact act out these requirements in the actual course choices that they make? A second aspect of the experienced curriculum is student learning behaviors. How much writing do

students typically complete, for instance, in order to meet class assignments, regardless of what a syllabus analysis of requirements might reveal? Or, consistent with the example above, how much actual exercise of oral communications skills do they report as having occurred in the classes that they take? Again, institutions typically know very little about such matters though they often devote meticulous attention to up-front issues of curricular design.

All three aspects of curriculum are important to assess, and appropriate indicator systems can be designed to reflect them all. Indeed, the best such systems are especially configured to detect discontinuities among them—for example, examining the ways in which particular elements of intended design are not being effectively translated into teaching practice and student experience. Detecting discontinuities of this kind, moreover, may be especially important when the elements of design in question correspond to the kinds of "good practices" described in the previous section. Many sound curricular approaches intended to reflect such practices were deployed in colleges and universities throughout the eighties. But frequently they were not well implemented, and both faculty and students continued behaving much as before. This suggests that indicators be consciously designed to incorporate both the presence and character of intended "good practices" as well as the degree to which they are "acted out" in the form of appropriate policies and behaviors.

Applying this approach yields the taxonomy shown in Figure 2, which can be used as a rough guide for both developing individual indicators and for assessing their collective coverage. Cells within this matrix consist of particular intersections between particular "good practices" on the one hand, and how they specifically are present in institutional expectations, instructional delivery, and student experiences on the other. An additional column in the matrix addresses the degree to which resources (fiscal, human and physical) are allocated in support of known "good practices," and constitutes a distinctive domain for developing indicators. The catalog of sample good practice indicators contained in this *Handbook* is based on this taxonomy, and each entry in the catalog references a particular set of cells within the matrix.

Indicators and Outcomes

When developing and using indicators based largely on "good practices," the question of the relationship of such practices to actual learning outcomes frequently arises. Many maintain that directly measuring educational outcomes provides much more valid and credible evidence of instructional quality than examining educational processes, and that assessments of this kind should be preferred wherever possible. Up to a point, this argument is reasonable: indicators of "good practice," no matter how well developed, cannot substitute for outcomes measures. The principal premise of this *Handbook* is that such indicators are useful in their own right and can be valuable in both guiding practice and improving accountability. Developing "good practice" indicators that are substantively related to outcomes is quite feasible, and what research tells us about the empirical strength of these relationships should be carefully considered.

A first point to consider is that all indicators of educational attainment are in some sense "indirect." Cognitive measures of student attainment like standardized tests and performance-based assessments are no exceptions, and should not be confused with the actual entities that they purport to represent. But less direct representations of these abilities for indicative purposes may be of two very different kinds. On the one hand, useful and reliable statistics for tracking institutional progress in improving instruction might be developed that are highly correlated with desired outcomes without being causally related to these abilities. Common examples here include the results of other, more easily administered, examinations known to be related to the traits in question or student self-reports of gains in skills or knowledge. As noted in Chapter 2, proxy indicators such as these are commonly used in other fields to document trends, but their major drawback is that they cannot generally be used to inform policy or to direct action. On the other hand, indicators can be

Figure 2

A Taxonomy for Developing "Good Practice" Indicators

	A Resource Investments	B Institutional Requirements	C Instructional Delivery	D Student Experiences
1 High Expectations				
2 Coherence in Learning				
3 Synthesizing Experiences				
4 Integrating Education and Experience				
5 Active Learning				
6 Ongoing Practice				
7 Assessment and Feedback				
8 Collaborative Learning				
9 Time on Task				
10 Respect for Diversity				
11 Student/Faculty Contact				
12 Early Years of Study				

developed that reflect an underlying philosophy that knowledge of educational inputs and processes is worth obtaining in its own right, so long as evidence exists that these are broadly related to cognitive attainment. Here the payoff for academic management is not only the ability to monitor progress but to inform intervention as well.

The latter philosophy, of course, is the one that grounds this *Handbook*. Evidence of its appropriateness is based on a focused review of the empirical research literature on general collegiate skills attainment previously conducted by NCHEMS (1994) under contract to the U. S. Department of Education, intended to assess the feasibility and utility of developing a range of "good practice" indicators that might be suitable for collection on a national basis. In this review, three specific informational domains were examined for their linkages with outcomes. A first review of instructional requirements covered the relationship between outcomes and specific curricular requirements or coursetaking patterns, particular instructional designs, and expected levels of student performance. A second review of instructional practices covered similar associations with class size and structure, specific classroom activities and behaviors, and influences attributable to the wider institutional environment. A third review of student experiences and behaviors covered relationships between outcomes and student time on task, quality of effort, and overall involvement.

Results of these reviews are summarized in Figure 3. As shown, the strongest empirical relationships were noted for "active learning" classroom practices, for broad levels of student involvement in the institutional environment, and for high student time on task and quality of effort. More specifically, the overall results of this exercise are sufficiently strongly-patterned to suggest far stronger linkages between desired outcomes and what happens in class and what students do, than it suggests the importance of particular institutional investments or curricular structures. Where the latter are important, moreover, it appears to be largely because of the opportunities for actions and behaviors that they enable, and not so much because these features are important in themselves. A brief additional review of evidence for the validity of self-reported cognitive development through student questionnaires was also undertaken as part of this exercise. As also noted in Figure 3, results suggested moderate but reliable associations between self-reports and directly measured levels of cognitive attainment.

In assessing the utility of sample indicators contained in this *Handbook's* catalog—or in developing additional "good practice" measures of their own—institutions should carefully consider the strength of these associations. Where the existence of a strong relationship between cognitive attainment and the indicator being considered is important, such evidence should be prominently considered in making a choice. In many cases, however, the existence of an empirical relationship of this kind may be less important. Levels of student satisfaction or student/faculty ratios, for example, may be worth monitoring because they indicate phenomena of high interest to external constituencies regardless of any direct relationship with student outcomes that may be present.

Figure 3

Summary Chart of Potential "Good Practice" Indicators

Indicator Domain/Dimension	Relative Strength of Association with Goal 5.5 Outcomes	Available Methods for Collective Indicators Data	Relative Ease of Data-Gathering	Policy Relevance	Overall Potential
A. Institutional Requirements:					
Broad General Education Curriculum/Requirements	Weak/Moderate	- Catalogue Review - Institutional Questionnaires/ Inventories (e.g., Peterson 1987)	Difficult	High	Low
Breadth of Coursetaking/ Types of Coursetaking	Moderate	- "Breadth" and "Depth" of Courses Taken (Zemsky 1989) - "Differential Coursework Methodology" (Ratcliff & Associates 1988)	Moderately Difficult	Moderate	Moderate
Special Courses/ Instructional Designs	Moderate (but likely derivative)	- Catalogue Review - Institutional Questionnaires/ Inventories (e.g., Gamson & Poulsen 1989)	Difficult	Low	Low
Levels of Expectation	Moderate/Strong (via association with "Small Liberal Arts College" effect)	- Rating Examinations and Course Materials by Level of Difficulty (e.g., Braxton & Nordvall 1985)	Difficult	Moderate	Moderate
B. Instructional "Good Practice":					
Class Size and Structure	Low/Moderate (but likely derivative)	- Institutional Surveys/ Statistics	Moderately Difficult	High	Moderate
"Active Learning" Practices in Class		- Faculty Surveys (e.g., 7 Principles Surveys, Gamson & Poulsen 1989)	Not Difficult	Moderate	High
- Practice of Skills	Strong	- UCLA Faculty Survey (Astin 1992)			
- Frequent Feedback	Strong				
- Peer Interaction	Strong	- Student Surveys (e.g., CSEQ - Pace 1987, CIRP - Astin & Associates 1992)			
Wider Institutional Environment					
- Involvement	Strong/Moderate (Complex Interaction of Factors)	- CSEQ (Pace 1987) - CIRP (Astin & Associates 1992)	Not Difficult	Moderate	High
- Student/Faculty Contact	Strong/Moderate (but also may require data on nature of interaction)		Not Difficult	Moderate	High
C. Student Behavior:					
Time on Task	Strong/Moderate (but also requires quality of investment measures)	- CSEQ (Pace 1987) - CIRP (Astin & Associates 1992)	Not Difficult	Moderate	High
"Quality of Effort"/ Involvement and Investment	Strong	- CSEQ (Pace 1987)	Not Difficult	Moderate	High
D. Self-Reported Cognitive Development:					
	Moderate/Strong	- CSEQ (Pace 1987) - CIRP (Astin & Associates 1992) - ACT-ESS (ACT 1982) - NCHEMS SOIS (NCHEMS 1983)	Not Difficult	N/A	Moderate

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Chapter 4

Data Sources for "Good Practice" Indicators

Indicators of instructional practice can be derived from many sources and the best such systems rest on a range of data-collection methods. As might be expected, some data sources are better suited than others for providing data on particular domains. In conjunction with the catalog of "good practice" indicators included in this *Handbook*, this chapter briefly describes some of the data sources most commonly used. At the same time, it suggests some ways of presenting such information to various constituencies, and of organizing and archiving such data designed to maximize their utility for academic planning and decisionmaking.

Types of Data Sources

The best indicator systems employ data sources that deliberately reinforce one another. "Hard" data on student coursetaking drawn from actual transcript records, for instance, can be used to cross-check student self-reports on the range of courses that they have taken or the kinds of experiences that they have engaged in. Indeed, triangulation of this kind remains one of the best safeguards against biased or misleading conclusions drawn from evidence which is by nature indirect.

Among the most prominent sources of data generally used to construct indicators of "good practice" are the following:

- **catalog or syllabus review**. Probably the most straightforward method for developing useful indicators of intended content and coverage uses published descriptions of courses. Applying this approach at the broadest level, indicators can be constructed about the overall structure and coverage of instruction for the institution as a whole and across its programs. Catalogs and other documents that include descriptions of the specific courses needed to complete requirements and the sequence in which these must be taken, for instance, can yield useful measures of curricular coverage and coherence, of disciplinary concentration, or of the relative amount of choice among courses allowed to students in meeting program requirements. At a somewhat deeper level, individually-prepared faculty syllabi can provide additional data about the ways in which instruction

is actually being delivered. Tapping the rich array of individual syllabus material typically available on any campus, for instance, allows detailed examination of the "expectational" curriculum: how much writing do faculty actually expect students to accomplish in their courses, for example, regardless of published goals or advertised program requirements? Syllabus reviews also allow measures of conformity to objectives to be constructed: for each outcome or goal of general education, for instance, how many courses available for general education credit actually address this intended outcome explicitly as a course goal? At the highest level of detail it is possible to match designed course material to explicitly-identified levels of competency on intended core outcomes in order to physically map the specific places within a particular curricular sequence at which these levels are developed, required, and actually assessed (Ewell 1996).

- **transcripts or student records.** Transcript records provide the most comprehensive basis on which to develop measures of the behavioral curriculum. Unfortunately, they are also one of the most intractable sources of information available, because student records systems at most institutions are not usually designed to analyze patterns of student coursetaking. Fortunately, some progress in tapping this rich source of information has occurred. First, useful national standards for coding samples of transcripts that allow meaningful comparisons of coursetaking patterns across quite different types of programs and settings have been developed (Adelman 1990, 1995). Using these standard coding categories, measures of such phenomena as student exposure to particular fields of study can be developed—which often differ substantially from formal program structures. Second, some powerful summary measures of overall coursetaking behaviors have been constructed that reduce extremely complex transcript detail into broad behavioral patterns. These include, for example, overall depth of disciplinary exposure or the degree of course choice typically exercised by students drawn from different demographic groups or enrolled in different programs of study (e.g., Zemsky 1989). Such measures are useful not only as indicators in themselves, but also as experiences to be associated with student performance. Finally, transcript files allow some measurement of performance in the form of grades earned or subsequent courses passed. If individual assessment results are also included in an institution's record system (or can be matched to individual student records via an identification number), powerful indicators can be constructed about the adequacy of prior curricular preparation or about the contribution of particular courses to specific outcomes. Detailed methods for conducting analyses combining student transcript records with assessment data are available from several sources. One example is the "differential coursework methodology" developed by the National Center on Postsecondary Teaching, Learning and Assessment at Penn State (Ratcliff and Associates 1988). Another is the approach used by Astin (1992) to identify specific curricular experiences to be linked to student gains in achievement. In both these cases, a standard coding scheme is used to classify the individual courses contained in a given student's transcript record, the results of which are then linked to additional data on experiences or outcomes.

- **self-reports from faculty and students**. What faculty say they do and value and what students say is delivered or experienced are among the most powerful ways to get at the behavioral aspects of instruction. Indicators of curricular quality based on student self-reports, for instance, are ideally suited to assess "good practice." While syllabi and transcript records can record levels of expectations and patterns of attendance far more accurately and completely than can student recollections, students themselves are probably in the best position to report on such matters as their own levels of effort, whether or not they spoke in class and how frequently, or the degree of group-work that they might have engaged in.

Most institutions already use survey self-reports to evaluate individual classes through the

familiar mechanism of student ratings of instruction. But such instruments are generally aimed at a single purpose: evaluating the behavior of individual instructors for purposes of promotion and tenure. Increasingly, however, such questionnaires are being reconfigured to additionally capture students' own behaviors or perceived learning (Ewell 1991). This trend has been given a powerful impetus by the classroom assessment movement (Angelo and Cross 1993), but remains distinct in purpose because the results of classroom research are not generally intended to be codified or widely shared across the institution. An important caution involved in using information drawn from such sources, therefore, is to ensure a proper level of aggregation in reporting the resulting indicators. It is generally inappropriate, for example, to report student testimony on such matters on a class-by-class or an instructor-by-instructor basis.

While items designed to assess time on task, amount of writing assigned and accomplished, or the incidence of active learning experiences are well-suited for inclusion in end-of-course questionnaires, they are equally amenable to broader questionnaires administered periodically to samples of students. Most institutions make occasional use of student surveys of this kind, but most concentrate on overall student satisfaction and student use and reactions to specific services. Few such questionnaires include items especially tailored to tap learning experiences and behaviors known to be related to achievement. The indicators catalog included with this *Handbook* contains a wide variety of questionnaire items of this kind, which institutions can use in constructing their own instruments. The most prominent national examples of instruments that embody such items are the Cooperative Institutional Research Program (CIRP) Follow-Up Survey (Astin and Associates 1992) administered to nationally-normed samples of college students, and the College Student Experiences Questionnaire (Pace 1984) now available through the University of Indiana. The latter is especially suited to tapping many of the dimensions of good practice described in this *Handbook*, and new scales have been developed to explicitly reflect three of them—student/faculty contact, active learning, and cooperation among students.

Reports from faculty constitute a similar, but less well-tapped source of information about instructional behaviors. Some surveys of this kind have been designed to document typically-used instructional practices—for instance, the model instruments designed to assess faculty application of the "Seven Principles of Good Practice in Undergraduate Education" (Gamson and Poulsen 1989) or the surveys used by Angelo and Cross (1993) to investigate the perceived importance of particular goals for instruction in faculty teaching behavior. Others are more oriented toward determining broader underlying instructional values (for example, Astin 1992). Probably the most common indicators collected in this way are amounts of time actually spent on instruction and reported use by faculty of particular instructional techniques.

Whether self-reports are obtained from faculty or students, questions of validity often arise. These are generally of two kinds. One is the overall credibility of self-reported behaviors in particular performance situations. Faculty, for instance, are more likely to provide accurate testimony about the general value placed on teaching in their departments than they are to reliably report their own behaviors. Similarly, students are usually better judges of what they have done (e.g., how they spent their time) than they are of how much they have learned. A second difficulty of using survey data to develop indicators is the fact that data drawn from questionnaires rarely yield usable "point estimates" of performance—especially on items related to attitudes or satisfaction. A finding that 58% of students majoring in biology are "extremely satisfied" with instruction in their major, for instance, is far less useful in itself than knowing that this value was 76% for last year's graduating class, or that a difference of 15% in satisfaction levels separates the men from the women. As a result, the best uses of indicators drawn from survey sources rely strongly on analyses of trends over time, or of the differing experiences of particular subpopulations of students and faculty.

Self-reports about specific outcomes and experiences, on the other hand, can be unusually credible when used to provide "consumer information" to outside audiences. Policymakers and potential students, for instance, will likely consider the testimony of employers and former students to be considerably more valid and relevant in informing the specific choices that they must make than far "harder" data supplied by institutions that lack the perspective of direct experience.

- **assessment and student work samples.** Direct assessment of student achievement often provides the most convincing evidence of instructional effectiveness. As a result, most institutions are currently engaged in some kind of outcomes assessment effort. Increasingly, however, the assessments engaged in are "authentic"—relying less on purpose-built measures such as standardized tests and comprehensive examinations and more on embedded assessment devices that allow broad information about student development to be inferred from re-examining actual classroom work. Among the most popular approaches are student portfolios and work samples. Here institutions assemble typical examples of student work produced as part of the instructional process, then score these naturally-occurring products according to pre-designed criteria to derive a measure of such abilities as writing, critical thinking, or awareness of cultural diversity.

  Quite properly, these techniques have up to now focused principally on the two extremes of the teaching-learning continuum—determining overall levels of institutional or program attainment in relation to desired outcomes, and guiding the process of instruction within individual classrooms. But outcomes assessments such as these can play two additional roles. One is the often considerable amount of information about real curricular content that can be obtained through the use of such assessments. Long-time observers of assessment in action have particularly emphasized the indirect benefits of the process in clarifying goals (Banta and Schneider 1988, Banta 1993). Others have noted how assessment evidence of this kind often has as much (or more) to say about curricular structures as it does about actual outcomes (Ewell 1991). For example, institutions using portfolios have occasionally found this exercise more valuable in determining what faculty are really assigning, and the alignment of these assignments with curricular goals, than in directly documenting student attainment (Ewell 1996).

  A second underattended application of assessment techniques is to determine more precisely whether intended connections among courses are in fact occurring. Considerable evidence on this topic can be compiled by examining transcripts and other student enrollment records. But more direct methods are also available for determining the degree to which previously-learned content and skills are effectively deployed in new contexts. One such approach is to embed pre-tests and post-tests directly into specific course sequences, designed especially to determine if prerequisite skills present at the end of one course are in fact present in the next (Farmer 1988). A variant on this approach is to systematically code the kinds of errors students make in a subsequent course when applying previously-covered material (Harris and Baggett 1992).

As these examples suggest, the most powerful approaches to assessing good practice will employ both outcomes and process measures. In developing appropriate indicator systems for purposes of either external accountability of internal curricular improvement, institutions are well advised to pay equal attention to both.

Developing a "Quality Management Database"

Much of the data required to construct appropriate indicators of instructional "good practice" is already collected by institutions. But the data required are not usually maintained or configured in a manner that allows their easy retrieval and manipulation. Needed data elements are often located in different computer files or records systems (if, indeed, electronic records exist at all). To create usable indicators, they must often be extracted laboriously from these sources and reassembled in a more suitable medium—generally a spreadsheet or a microcomputer database. This is usually a difficult and time-consuming task, and one that must be repeated each time such a statistic is wanted. In particular, modifying current transaction-oriented computerized record systems such as registration or financial systems—which are designed for a quite different purpose—to construct appropriate indicators, may require extensive re-design and re-programming.

Similarly, the results of "special-purpose" data-collection efforts like student surveys and outcomes assessments are typically maintained in separate data files by the offices that collect them. While such data are usually amenable to retrieval and further manipulation, they may be stored in quite different formats and they are rarely documented in a manner that allows access beyond those who originally collected and analyzed the data. More importantly, most such data-collection efforts contain far more data than may be relevant in producing indicators for general institutional purposes. A questionnaire administered annually to all enrolled students by the Office of Student Life, for instance, may contain only two or three items of interest—for example, student perceptions of the supportiveness of the campus environment to working in teams—while the vast majority address topics that are only relevant to the office administering the survey. General-purpose data items such as these may be contained in dozens of unrelated surveys and assessments, but unless they are centrally assembled and adequately documented it may be simply too much trouble to access them individually when developing indicators.

Given these conditions, many institutions have found it beneficial to develop a set of specially-designed analytical databases configured specifically to generate regularly-used performance statistics like the indicators described in this *Handbook*. Data elements contained within this database are periodically extracted from operational records systems and from any regularly-occurring surveys and assessments at defined census intervals. And the file structures of the database itself are configured to allow easy calculation of statistics and performance ratios drawn from quite different data sources.

Because such files are configured as integrated relational databases, manipulating the information to create needed performance measures and to conduct typical *ad hoc* queries is straightforward. But it is critical to design the management database in this fashion from the outset, rather than developing calculational routines for individual indicators in isolation. Even if the full database design is never fully realized, the systematic thinking about information that it provokes can provide a major gain for the institution in linking and interpreting the data that are available. Indeed, many institutions have found that one of the major benefits involved in putting such a design together is that it forces institutions to inventory (and perhaps re-structure) the often considerable array of data on instructional delivery that they already have (Ewell and Lisensky 1988).

Figure 4 outlines the basic features of an academic "quality management" database of this kind by contrasting it with "transaction-oriented" records systems on the one hand, and top-level "decision-support" systems on the other. As noted in the figure, most colleges and universities already have many "operational data systems" designed primarily for record-keeping purposes, that reside on administrative computers or in individual unit-level microcomputers. These are designed primarily to provide an automated capability for managing individual transactions (such as cutting a check or generating a transcript) or for retrieving and

Figure 4

Types of Databases for Academic Management

	Operations Systems	Analytic Systems	Decision-Support Systems
Primary Constituents:	"Record-Keepers"	Planners/Analysts	Top Decisionmakers
Design Focus:	Individual Transactions	Aggregate Analyses	Informing Particular Problems/Decisions
Basic Ingredients:	Student Records Financial Records Assessment Results Questionnaire Files	Enrollment Files Cohort Files	Quality Indicators "Fact Books" Program Review Data Ad Hoc Requests
Computing Environment:	Mainframe Systems Microcomputers in Individual Offices Paper Records	Networked Microcomputers or Mainframes	Individual Microcomputers

inspecting individual records (such as supporting an advising session or making an individual admissions decision). Requirements for decision support, at the other end of the information spectrum, are very different. Here, the primary need is to provide information that directly relates to particular problems, processes, and decisions typically faced by managers. Decision-support data of this kind typically (and appropriately) resides in published statistical compendia or in microcomputer spreadsheet or database files, where aggregate information can be easily identified and manipulated. Indicators of "good practice" of the kind described in this *Handbook* are typically kept in such forms.

Many institutions attempt to generate such decision-support information as needed directly from operational databases. But this approach typically encounters problems, both because the data contained in operational databases are not always comparable and because the tools needed to manipulate the data directly are hard to use. As a result, the best approach is generally to create a flexible analytical database with the characteristics noted in the middle column of Figure 4. Data contained in this database are periodically extracted from operational records systems at defined census intervals to ensure consistency. And the file structures of this database are designed to allow easy manipulation of data elements drawn from many disparate sources, as well as calculation of the kinds of statistics and ratios required to produce useful indicators. The best medium for accomplishing this task is a statistical software package (such as SPSS or SAS) or a sophisticated database package (such as Paradox or Access), resident on either a mainframe or a large microcomputer.

Analytical databases of this kind typically contain a set of structured data files designed specifically to support academic planning. Each file within the database contains a set of pre-defined data elements extracted from basic operations systems or from unit-level evaluations or assessments in pre-defined formats and at designated times. Appropriate extract times, of course, will depend upon the nature of the data, but for student records data they will typically include official census date information and end-of-term information. In the case of the survey or assessment data prominent in constructing indicators of "good practice," a strong implication is that institutions establish a regular cycle for the administration of such instruments so that their results can be meaningfully compared from year to year. Whatever the reporting period used, care should be taken that appropriate aggregations across different time periods are possible; in the examples above, for instance, it should be possible to generate meaningful annual information on academic activities in relation to annual levels of assessed student satisfaction with instruction, even though each of these types of data is collected at a different point in time.

Appropriate file structures for such a database may vary considerably according to need, but at minimum, they include the following components:

- a set of **term extract files** containing basic enrollment and course information, suitable for generating a range of historical term statistics and indicators.

- a set of **survey or questionnaire files** containing extracted items of general interest for investigating instructional delivery, and drawn from regularly-administered student surveys, surveys of faculty, or results of end-of-course evaluations.

- a **longitudinal student tracking file** assembled on a cohort basis and containing the data necessary to investigate retention rates, time to degree-completion, patterns of coursetaking, and the effectiveness of core or developmental coursework in terms of later academic performance (see Ewell, Parker and Jones 1988).

- a **course/history file** assembled on a term basis, and containing the data elements needed to examine patterns of course attendance by discipline and level for particular types of students, or patterns of attendance and scheduling.

Each data element contained in such files requires standard definition and should be documented in an institutional Data Element Dictionary. Documentation should contain at minimum a) a conceptual

definition of the data element in question, b) a description of how it is obtained or calculated (e.g., through an admissions form), c) which particular operational database it is extracted from (noting, if relevant, the specific data element name or label used in this environment, d) exactly when it is collected or extracted, and e) its particular coding or categorical structure within the database. Note also that many of the data elements included in the analytical database are derived from several sources or involve additional manipulation of the base data elements contained in the operational databases from which they were drawn. Where this is the case, the specific calculational rules and/or extraction procedures used to build these elements should also be documented in the Data Element Dictionary.

Because analytical files of this kind typically reside within a standard statistical or database software package, manipulating information to support flexible data analyses and typical *ad hoc* queries is relatively straightforward. In addition, such software packages allow pre-programming a range of regular reports and indicators that can be run at regular intervals to support ongoing institutional and unit-level planning and evaluation activities. As an example, such a database might be used to generate:

- a set of overall "good practice" indicators of the kinds described in this *Handbook*.
- a set of program-level performance indicators intended to support the institution's current process of academic program review.
- most of the contents of the institution's current Fact Book consisting of information on enrollments, academic activity, personnel, fiscal and physical condition, and similar items.

In all three cases, moreover, statistics of these kind can be made available not only in print form, but also as spreadsheets—allowing academic administrators at many levels to extract and manipulate data to meet their own local needs.

Presenting Indicators Results

Because of the growing salience of indicators to both internal and external audiences and the often quite different perspectives of different constituents, special care is generally needed in communicating indicators results. Precisely because they are generally indirect, indicators of good practice are especially easy to misinterpret if the proper caveats are not provided. For external reporting, moreover, communicating institutional actions taken in response to lower-than-expected indicator results can be as important as reporting the results themselves.

A number of issues are associated with presenting the results of indicators such as those presented in this *Handbook*. First, results must be placed in their proper context in order to avoid significant misinterpretations. When additional data that provide an interpretational framework for the values of specific indicators are provided, misinterpretations of this kind are far easier to avoid. A related set of issues involves the amount and kinds of interpretative material to provide. Unaccompanied numbers invite misperception, but too much "explanation" in a public report can detract from the results themselves, and can appear overly directive or defensive.

Assessment results are especially vulnerable to misinterpretation because their values may depend far more on intended differences in the particular student clienteles served by various institutions or programs than on any real differences in unit "performance." Results of "good practice" indicators are no exception. But how to present such differences appropriately can present a major challenge for public communication. Past experience with reporting results of this kind, however, suggests that the following approaches be considered:

- **disaggregating results appropriately.** One way to avoid unfounded "bottom line" comparisons is to present results for each academic unit or student subpopulation broken down by a number of

appropriate factors that may affect performance. Here, demographic factors such as gender or ethnic background may be useful, as well as breakdowns by student major or prior ability. In presentations of this kind, institutional or unit totals might or might not be provided, depending upon the degree to which overall differences in performance among units is intended to be highlighted. Obviously, use of this method depends upon having sufficient numbers of students or classes present within each level of disaggregation to provide meaningful statistics—a factor which may require careful prior planning with respect to data collection.

- **providing appropriate standards of comparison.** Absent a visible anchor point for judging the value of any given indicator, different audiences will naturally apply different standards. Any reporting mechanism should therefore consider carefully the kinds of "interpretive" benchmarks to be provided. A first alternative here is comparisons with established norms of some kind. While these will be rare for indicators of instructional good practice, they may well be available for student behaviors through the results of nationally-administered surveys like the CIRP or CSEQ—especially for such measures as student satisfaction or time-on-task. A second alternative is to provide comparisons over time in the form of trends. Such reports are especially helpful in monitoring progress and in helping to assess the effectiveness of any changes in programs of policies that may occur. At the same time, trend-based presentations allow inevitable statistical variations to be shown directly and therefore taken into account. Finally, comparisons can be made against agreed-upon targets or standards. Based on a range of factors, different targets might for example be set for different populations or for different types of academic units, depending upon their specific characteristics or missions. If this approach is adopted, care should be taken to ensure that such targets are realistic and achievable. Achieving such targets, moreover, should not be associated with such high stakes that institutions or units are tempted to "manage the numbers" rather than engaging in real, long-term improvement efforts.

- **using appropriate formats and graphics.** A considerable amount of information can be conveyed comparatively and in graphic form, and indicators data are usually especially suited to visual presentation. Graphics are also effective in some contexts and less so in others. In general, graphics make good sense for showing trends over time or variations in performance for different populations within a range of units or contexts. They are less well-suited for presenting single-dimensional "bottom-line" data like satisfaction levels or performance ratings, where a well-laid-out statistical table is generally more effective. Regardless of its format, each indicator display should also be accompanied by a brief interpretive narrative that points out important elements of context and that highlights major conclusions. Often, narrative of this kind can be incorporated directly into the display itself in the form of footnotes or titles.

Used in concert, these principles provide good general guidance for presenting the kinds of indicators contained in this *Handbook*. But it is important to emphasize that individual contexts and experiences may vary, and practitioners are urged to pilot various approaches to data presentation on different audiences in advance, and to incorporate the resulting suggestions into the indicator systems that they eventually adopt.

Chapter 5

Some Concluding Thoughts

Indicators of the kinds described in this *Handbook* have many potential uses. In an academic environment increasingly characterized by rapid change and multi-faceted modes of delivery, they can help academic managers keep track of what is happening across a wide range of instructional settings. At the same time, such information will be more and more required by external agencies and by "consumers" of higher education faced with complex attendance choices and difficult investment decisions.

But the effective development and use of tools like "good practice" indicators requires the adoption of a wider management philosophy. Paramount here is the commitment to re-direct management information toward core aspects of the educational enterprise—to measure what we really value. Equally important is the promise to actually use information consistently in support of improvement—a pledge that administrators must make continually in every forum available and that they must also stand by in the long term, despite the implied sacrifice of managerial discretion. Finally, good management requires consciousness of the limits of all information—especially indicative information. While measures of "good practice" may point out strengths, weaknesses, and specific opportunities for improvement, they should not be used on their own to make final decisions. Administrators at all levels should resist the sometimes compelling temptation to abdicate decisional responsibility by creating thresholds and formulas that "automatically" determine levels of resource investment or particular program and institutional priorities.

Though the context for higher education has changed markedly over the past two decades, the conceptual principles underlying information-based management and decision espoused in this *Handbook* remain in many ways unaltered. Embodied in the development of sound indicators of instructional good practice and performance—and flexibly and appropriately applied—these principles have new relevance in the turbulent decade of the nineties. Distilled to a single phrase for today's busy policymakers and institutional managers, their essence can be easily stated: "If it's important, count it; but above all, think before you count."

A Catalog of "Good Practice" Indicators

This section of the *Handbook* illustrates a range of sample "good practice" indicators consistent with the twelve dimensions presented in Chapter 3. Its intent is to give institutions contemplating the development of an indicator system a place to start, but the catalog makes no pretence of describing all possible indicators of this kind. Indeed, its purpose is well served if institutions make modifications in the sample indicators presented to better suit their particular circumstances or to use them as a point of departure for developing their own.

Indicators in this section are organized in terms of the taxonomy presented in Figure 2 in Chapter 3. Each is described on a separate page which contains the following information:

- **Indicator.** This provides a brief title for the indicator that briefly describes its contents.
- **Description.** This entry provides a fuller description of the indicator, its intent and uses, and the manner in which is derived or constructed.
- **Associated "Good Practice."** Though already embedded in the reference number, this entry notes for ease of reference the particular "good practice" domain associated with the indicator. If more than one such domain is potentially so associated, multiple entries are listed with the principal association listed first.
- **Associated Perspective.** This repeats the particular "indicator perspective" already embedded in the reference number. Again, if more than one perspective is associated with the indicator in question, each is listed.
- **Recommended Data Source and/or Calculational Procedure**. This entry describes more fully the particular manner in which the indicator is collected or constructed. In the case of questionnaire-based indicators, for instance, a suggested item text is included. If the indicator is the result of a combination of data items such as a percentage or ratio, suggested calculational rules are described for deriving it in a consistent fashion.

- **Reference Number**. This is a uniquely-assigned identifier which is used to classify the indicator in question. Its first two digits reference the indicator's principal association with one of the twelve "good practice" domains described in Chapter 3;

  a "0" [zero] in this entry notes the fact that the indicator is used to simply describe a curricular context without being associated with a particular "good practice."

  The upper-case letter constituting the third position in the identifying number references one of the three additional "cross-cutting" domains described in Chapter 3 according to the following scheme:

  A - institutional context and use of resources,
  B - institutional and curricular requirements,
  C - instructional delivery, and
  D - student experiences.

  A fourth letter in lower-case notes the particular data source used to construct the indicator, as described in Chapter 4; here the following scheme:

  a - catalog or syllabus review,
  b - transcripts or student records,
  c - self-reports from faculty and students, and
  d - assessment and samples of student work.

  Finally, within the class of possible indicators described by these combinations, the indicator is given a unique, identification number.

  Example: 11.C.b.1

  11 = Frequent Faculty-Student Contact
  C = instructional delivery
  b = transcripts or student records
  1 = unique identification number

In using the catalog, institutions may wish to re-organize entries using the reference numbers provided. For instance, if an institution is considering implementing or revising a survey of currently-enrolled students, it may wish to sort the catalog on the data-source entry to derive a list of potential candidates for "good practice" indicators and their associated question texts as a ready reference. Alternatively, if issues arise about how curricular structures are actually being delivered or experienced, it may wish to isolate only those indicators associated with curricular coherence and high expectations for consideration—regardless of data source. Again, the intent is to provide a flexible medium for stimulating good thinking, not to "standardize" on a particular format or approach.

INDICATOR: Proportion of general education courses or credits in a particular curriculum allocated to specific disciplines or areas of study, or to the development of identified prerequisite skills (e.g., writing, math, oral communications, etc).

DESCRIPTION: This is a general indicator of curricular coverage compiled from published catalog or syllabus material. Its primary utility is comparative—for instance in benchmarking a given institution's general education offerings against those of peer institutions, or of making comparisons across different program requirements within the same institution.

ASSOCIATED "GOOD PRACTICE": [Curricular Description]

ASSOCIATED PERSPECTIVE: Institutional Requirements

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is published catalog material or program descriptions containing the total number of credits contained in the curriculum and each of its components. The recommended statistic is a simple proportion calculated by dividing each curricular component of interest expressed in credit-unit equivalents, by the credit value of the curriculum as a whole.

REFERENCE NUMBER: 0.B.a.1

INDICATOR: The proportion of total credits needed to complete a given program of study that are required to be completed in the major discipline.

DESCRIPTION: This is a measure of overall disciplinary concentration within the designed curriculum, intended to reflect how broad or narrow the program is with respect to coverage. Its primary utility is comparative—for instance in benchmarking a given institution's general education offerings against those of peer institutions, or of making comparisons across different program requirements within the same institution. It can usefully be constructed with denominators using both the total number of credits required for graduation and those required to complete a given major.

ASSOCIATED "GOOD PRACTICE": [Curricular Description]

ASSOCIATED PERSPECTIVE: Institutional Requirements

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is published catalog or program descriptions containing listings of the particular courses which may be used to satisfy a given requirement. The recommended calculational procedure is construction of a simple ratio whose numerator is the number of credits in courses associated with a particular disciplinary listing and whose denominator is the total number of credits required to complete the program. An alternative "standard" method uses the OERI taxonomy for course classification (Adelman 1990) instead of raw department listings to construct the numerator.

REFERENCE NUMBER: 0.B.a.2

INDICATOR: Presence of a required demonstration of collegiate writing ability as a condition for graduation or program completion.

DESCRIPTION: This is intended as a very general measure of the degree to which a particular institution, program or curriculum sets a standard for mastery of an important cross-cutting skill. Because it is based on simple inspection, it does not contain information about the specific skill level set or the degree to which students attain it. Similarly, programs may set high standards for writing without having established a specific demonstration of competency in this area.

ASSOCIATED "GOOD PRACTICE": High Expectations

ASSOCIATED PERSPECTIVE: Institutional Requirements

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is program or catalog descriptions for the institution or curriculum in question. The indicator is a simple flag that notes the presence or absence of the noted curricular feature. Alternatively, an indicator might be constructed for comparative purposes that notes the proportion of curricula or programs at the institution containing such requirements.

REFERENCE NUMBER: 1.B.a.1

INDICATOR: Average number of pages of writing [or reading] required by assignments in humanities and social science courses.

DESCRIPTION: This is intended as a direct measure of expected levels of performance as reflected in actual course requirements. While it does not reflect the content of such assignments or their quality, it is likely reliable for purposes of monitoring levels of expected performance. While a number of data collection methods are appropriate, they should probably be used in combination because of the many limitations associated with documentary evidence and self-report.

ASSOCIATED "GOOD PRACTICE": High Expectations
Ongoing Practice

ASSOCIATED PERSPECTIVE: Instructional Delivery
[Student Experience]

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: Several data sources are appropriate for collecting this indicator. The most conceptually straightforward is an analysis of course syllabi for the range of courses of interest. Within each course section, assignments can be coded in terms of the probable (or explicitly expressed) number of pages involved in completing the assignment, with the result averaged across course sections. In the realm of writing, more powerfully, actual student portfolios can be constructed using an appropriate previously-identified cross-sectional sample of students. Finally, student self-reports on the amount of reading and writing required might be used—either on an overall graduating student survey or as items on end-of-course evaluations surveys administered to students enrolled in a given class.

REFERENCE NUMBER: I.C.a.1

INDICATOR: Overall distribution of grades granted.

DESCRIPTION: This is intended as very general contextual measure of the degree to which faculty communicate and apply high standards. Extremely high assigned grade levels suggest that high standards are not being enforced and that grade inflation may be taking place—although it is important to emphasize that small fluctuation in this measure are not meaningful and may indeed communicate wrong messages. Nevertheless, the statistic is easily compiled and does directly address one commonly-expressed external concern about undergraduate teaching practice.

ASSOCIATED "GOOD PRACTICE": High Expectations

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is the institution's registration records system for a given term or academic year. The statistic itself can be constructed in several ways, but is most commonly compiled as a distribution of the percentage of all assigned grades occurring within each grade category. Incompletes or withdrawals may or may not be included in the denominator of the percentage calculation, depending upon the intent of the indicator but the statistic should clearly report the numbers and/or proportions of such non-graded outcomes present. This statistic is also probably most useful when compiled on a unit, program, or class-level basis (e.g., freshmen, sophomore, etc).

REFERENCE NUMBER: 1.C.b.1

INDICATOR: Percentage of students graduating without writing a major research paper during their undergraduate career.

DESCRIPTION: This is intended as general measure of the level of expectations created for all undergraduate students. If a significant number of students were never assigned a term research paper of any kind, the institution's general education requirements will likely need attention. A major sustained piece of independent writing represents only one of several curricular experiences of this kind that might be tapped as an indicator of real faculty expectations. Others might include completion of an experimental or research design, writing a critique or evaluation of a piece of writing or reporting, etc.

ASSOCIATED "GOOD PRACTICE": High Expectations

ASSOCIATED PERSPECTIVE: Instructional Delivery
[Student Experiences]

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: Several data sources might be appropriate for this indicator. A complex though direct measure is a transcript analysis for an identified cohort of students. Here the calculation would demand previous coding of courses to determine whether the requirement of interest is in fact present (e.g., if a research paper of some kind was assigned), then searching each student's transcript record to determine if at least one such course was present. Such coding, of course, may require arbitrary judgments to be made about whether or not a particular requirement is in fact present. Once these are identified, the statistic is the number of students without such an occurrence divided by the total number of graduating students in the cohort. Alternatively, a self-report might be used; a suggested question text is, "In any of your classes as an undergraduate, did you have to prepare a paper that investigated in depth a topic that you chose yourself and that required substantial library or original research?"

REFERENCE NUMBER: I.C.c.1

INDICATOR: Percentage of students completing their freshman year without initiating a library search [or checking a book out of the library].

DESCRIPTION: This is intended as an indirect behavioral measure of the degree to which faculty create an expectation of library use through the assignments that they require. Because of differences among disciplines, it should only be used as an overall measure and, in the case of actually checking material out, should be treated as a "bounding" indicator, with extremely low values suggesting that low expectations or study habits are present.

ASSOCIATED "GOOD PRACTICE": High Expectations
Early Years of Study

ASSOCIATED PERSPECTIVE: Student Experiences

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is library records and requires the individual identification of student activity at the library. For materials actually checked out, these records are typically present on a student-by-student basis although because of the ways they are archived, compiling them for an annual period may prove challenging. For log-ons, searches or other transactions, such identification may present a larger challenge or not be possible at all. Alternatively, a self-report from graduating students might be used; a suggested question text is, "During your undergraduate years, in addition to studying and reserve reading, about how many times per week did you visit the library to look something up or to pursue a research question?"

REFERENCE NUMBER: 1.D.b.1

INDICATOR: Percentage of students reporting not being significantly challenged by class material and assignments.

DESCRIPTION: This is intended as a measure of students' own perceptions about the levels of expectation to which they are held accountable. Though a self-report, it constitutes a valuable indicator in its own right. If students feel unchallenged, the actual levels of achievement expected by faculty will likely bear looking at even though these may be high. Conversely, variations in perceived levels of challenge render this indicator inappropriate for comparisons among different types of institutions (though they may be useful to compare the experiences of different types of students).

ASSOCIATED "GOOD PRACTICE": High Expectations

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is additional item(s) included in an end-of-course evaluation survey administered to all enrolled students. A suggested question text is, "About how difficult or challenging did you find the material presented in this class? Was it presented at about the right level for you?" Alternatively, a graduation student survey item might be used, requesting respondents to rate on a five-point scale the overall difficulty or challenge presented by courses in their overall undergraduate career. In this case, courses in the major vs. general education or by year of study might usefully be distinguished.

REFERENCE NUMBER: 1.D.c.1

INDICATOR: The number of courses among which students can choose in order to meet a given curricular requirement.

DESCRIPTION: This indicator constitutes a rough measure of the degree of undirected choice students have in fulfilling a given curricular requirement, used for purposes of general description. Because it is particularly suited to examining requirements in distribution-based curricular schemes, it is especially applicable for examining general education programs.

ASSOCIATED "GOOD PRACTICE": Coherence in Learning

ASSOCIATED PERSPECTIVE: Institutional Requirements

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is published catalog or program descriptions containing listings of the particular courses which may be used to satisfy a given requirement. While an absolute count by field or area can be useful, the indicator is most beneficially calculated by dividing the number of courses available among which students may choose to fulfill a given requirement by the number of courses needed from this list to complete the requirement.

REFERENCE NUMBER: 2.B.a.1

INDICATOR: The proportion of the courses needed to complete a particular program of study that require prerequisites.

DESCRIPTION: This is a general measure of the sequence and structure of a given curriculum and can be constructed in a number of ways. Its primary utility is comparative—for instance in benchmarking a given institution's general education offerings against those of peer institutions, or of making comparisons across different program requirements within the same institution. Its essential logic is to determine how many of the courses required for completion themselves have prerequisites, and how many pre-requisites they have, in order to provide a measure of the "linearity" of the program. Programs that are high on this measure are elaborately structured. In addition, transferring into such programs will probably entail additional time to graduation. Programs low on this measure are relatively loose in structure, and it is unlikely that many intended connections among courses are intended in their design.

ASSOCIATED "GOOD PRACTICE": Coherence in Learning

ASSOCIATED PERSPECTIVE: Institutional Requirements

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is published catalog or program descriptions containing listings of the particular courses which may be used to satisfy a given requirement. The calculational procedure recommended is first to sort courses required for completion in a given program according to the number of pre-requisites that they require, then create a proportion for each "prerequisite group" so established. For instance, an institution might choose to construct a separate statistic for the proportion of total courses required that consist respectively of, a) courses that have no pre-requisites, b) courses that have one prerequisite, c) courses that have two prerequisites and, d) courses that have three or more pre-requisites.

REFERENCE NUMBER: 2.B.a.2

INDICATOR: Proportion of first-year [or 100-level] courses in writing or mathematics containing assignments explicitly linked to other discipline-specific classes.

DESCRIPTION: The intent of this indicator is to reflect conscious course designs and/or teaching practices that explicitly encourage students to make linkages across individual classes. These might include deliberate course designs in which assignments in disciplinary courses are used as settings for skills development (e.g., at least one paper in a composition course is also a paper for another course in which the student is concurrently enrolled) or assignments in skills courses that are consciously structured to reflect the disciplinary contexts in which students will later use the skill (e.g., calculus problems that are constructed around engineering or physics settings).

ASSOCIATED "GOOD PRACTICE:" Coherence in Learning

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is assembled syllabus material which must be coded manually to reflect the presence or absence of such features. Typically, these will be present in the assignments given to students and it may be appropriate to set a minimum criterion for inclusion based on the number of such assignments or the proportion of a student's grade that such exercises represent. Calculation of the statistic is then based on a simple ratio between courses containing such features and the total number of courses in the domain of interest. Alternatively, a survey of instructional staff might be used to collect this indicator by requesting respondents to identify the frequency with which they construct assignments that explicitly reference other course or disciplinary contexts.

REFERENCE NUMBER: 2.C.a.1

INDICATOR: Percentage of students reporting that they did [or were required to] make explicit connections between what they learned in a particular course and another course that they were taking.

DESCRIPTION: This is intended as a direct measure of student experiences in linking knowledge and skills across course contexts—an important element in coherence. As noted, it might be constructed either to reflect instructional delivery or actual experiences whether or not such connections were explicitly required. As a self-report, it is inherently limited as students will vary in their perceptions of what constitutes such a "connection," but the indicator is straightforward and easily included in a typical end-of-course questionnaire.

ASSOCIATED "GOOD PRACTICE": Coherence in Learning

ASSOCIATED PERSPECTIVE: Student Experience
Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an additional item included in an end-of-course evaluation survey administered to all enrolled students. A suggested question text is, "About how often in this class over the course of the term did you [or were you required to] make a specific connection between something that you learned in this class with an assignment or topic in another class that you were taking."

REFERENCE NUMBER: 2.D.c.1

INDICATOR: Proportion of curricula or programs requiring a capstone course, senior project, or other end-of-program synthesizing experience.

DESCRIPTION: The intent of this indicator is to provide an overall description of the extent to which programs contain curricular features consistent with the principle of synthesizing experience. Examples of activities consistent with this "good practice" are many and include capstone courses, senior theses or independent projects, comprehensive examinations, and internships or practicum settings. The principal requirement is that such experiences actively require the student to assemble and use knowledge and skill elements developed throughout the program in a manner that demonstrates that he or she can deploy them appropriately and flexibly, and understands the relationships among them.

ASSOCIATED "GOOD PRACTICE": Synthesizing Experiences

ASSOCIATED PERSPECTIVE: Institutional Requirements

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is catalog and syllabus material for the institution's programs and curricula. The indicator itself requires a simple flagging of each program or curriculum that requires such an experience as a condition of graduation.

REFERENCE NUMBER: 3.B.a.1

INDICATOR: Percentage of graduating students indicating that they were required to actively synthesize knowledge drawn from many courses and/or disciplines.

DESCRIPTION: The intent of this indicator is to directly measure completing students' perceptions of the degree to which they were asked to put together knowledge and skills in the assignments which they were given in their final year. As a self-report, it is limited because students may vary in the degree to which they recognize that such "synthesizing experiences" in fact occurred. In developing this indicator, moreover, distinctions might be made about whether such synthesizing experiences were present throughout the student's experience and in the major field.

ASSOCIATED "GOOD PRACTICE": Synthesizing Experiences

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an item included on a graduating student questionnaire. A suggested question text is, "During your final year of study, to what extent did the assignments you were given require you to put together what you learned in individual courses taken throughout your program to be successful?" A five-point scale is recommended.

REFERENCE NUMBER: 3.D.c.1

INDICATOR: Number of internships, practica, or other practice-oriented courses offered per student.

DESCRIPTION: This is intended to be a measure of the opportunity students have to engage in coursework explicitly designed to foster active or independent modes of learning and fuse education and experience. The types of sections noted are notable for their inclusion of such learning modalities and are probably easily identifiable within the institution's curriculum, but do not represent the total universe of such courses. Because they involve self-directed learning, independent study sections might also be included in the calculation of such a ratio, or might be used to construct a separate indicator. If the institution can identify further courses that can be determined to contain applied or active learning features such as self-paced modules, independent study, extensive teamwork, or substantial use by faculty of applied learning techniques in the classroom, these might also be included. As in other such measures, however, the indicator reflects only the opportunity to engage in active learning; it does not directly measure whether or the degree to which this kind of learning actually takes place.

ASSOCIATED "GOOD PRACTICE": Integrating Education and Experience
Active Learning

ASSOCIATED PERSPECTIVE: Institutional Requirements

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is the institution's registration records system for a given term or academic year. Calculation of the statistic requires courses containing learning components of interest to be readily identifiable in registration records—either because they have distinctive numbers or a special flag. Once identified, calculation of the indicator is a straightforward ratio between the number of such courses and total student enrollment calculated on a headcount or FTE basis.

REFERENCE NUMBER: 4.B.b.1

INDICATOR: Percentage of graduating students engaging in at least one internship, practicum, independent study, or similar self-directed or practice-oriented course during an undergraduate career.

DESCRIPTION: This indicator is intended to be a measure of the extent of total student exposure to courses that involve applied or active learning experiences. The types of sections noted are notable for their inclusion of such learning modalities and are probably easily identifiable within the institution's curriculum, but do not represent the total universe of such courses. If the institution can identify further courses that can be determined to contain extensive similar features such as self-paced modules, independent study, extensive teamwork, or substantial use by faculty of active applied learning techniques in the classroom, these might also be included. As in other such measures, participation in such courses does not in itself guarantee that such learning is taking place.

ASSOCIATED "GOOD PRACTICE": Integrating Education and Experience
Active Learning

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The primary data source for this indicator is the institution's records system for an identified cohort of graduating students. Its calculation requires courses containing practice-oriented components to be readily identifiable in registration records—either because they have distinctive numbers or a special flag. Once these are identified, the statistic is calculated by searching the transcript record of each completing student and determining if course records are present that are appropriately identified. If one or more such courses are indeed present, the student is counted in the numerator of the statistic with the denominator being the total number of graduating students. Alternatively, the indicator can be collected through a graduating student questionnaire. A suggested question text is, "In the course of your undergraduate career, did you take any courses that required you to apply what you learned in real settings such as independent studies, practica, or internships?"

REFERENCE NUMBER: 4.D.b.1

INDICATOR: Percent of students involved in faculty research.

DESCRIPTION: This is intended as a direct measure of an effective practice for synthesizing education and experience, obtained by self-report from graduating seniors. This indicator reflects only engagement or frequency of such activity but additional indicators might be developed to reflect student's perceptions of the quality of such experiences and any associated learning gains. Furthermore, parallel indicators might be developed based on faculty reports of involvement with students in research activities.

ASSOCIATED "GOOD PRACTICE": Integrating Education and Experience
Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Student Experiences

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The primary data source for this indicator is appropriate items on a graduating student survey. A suggested question text is, "Did you ever assist a faculty member on a project relating to his or her research?" Alternative formats might tap the frequency with which such activities occurred by year. For faculty, a suggested text for inclusion in a periodic faculty survey is, "How many undergraduate students directly participated in your research this year?"

REFERENCE NUMBER: 4.D.c.1

INDICATOR: Percentage of courses requiring students to engage in independent research papers, projects, presentations, or similar exercises.

DESCRIPTION: The intent of this indicator is to examine the overall proportion of courses in a particular array that include designed practices consistent with active learning. Because its source is published syllabus material, the statistic may not directly reflect the presence of such practices for two reasons: they may be present and not documented in the syllabus, or they may be claimed in the syllabus and not actually practiced. Because of these drawbacks, the statistic should be interpreted with caution. The statistic is also most useful in comparing different subsets of courses (e.g., across departments, by level, etc.).

ASSOCIATED "GOOD PRACTICE": Active Learning

ASSOCIATED PERSPECTIVE: Institutional Requirements

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is assembled syllabus material which must be coded manually to reflect the presence of appropriate opportunities or practices. Typically, these will be present in the assignments given to students, and it may be appropriate to set a minimum criterion for inclusion based on the number or such practices or the proportion of a student's grade that such exercises represent. Calculation of the statistic then is based on a simple ratio between courses containing such practices and the total number of courses. Because of the difficulty of accomplishing such coding, the indicator might be calculated only on the basis of a random sample of classes, or for classes that meet particular criteria (e.g., 100-level, offered for general education credit, etc.).

REFERENCE NUMBER: 5.B.a.1

INDICATOR: Percentage of courses explicitly requiring students to use the library as a research resource.

DESCRIPTION: The intent of this indicator is to examine the overall proportion of courses in a particular array that include library use, which is consistent with active learning. Because its source is published syllabus material, the statistic may not directly reflect the presence of library-related assignments for two reasons: they may be present and not documented in the syllabus, or they may be claimed in the syllabus and not actually practiced. Because of these drawbacks, the statistic should be interpreted with caution. In addition, it can be cross-checked with student self-reports about the amount of library work assigned and their own use of the library.

ASSOCIATED "GOOD PRACTICE": Active Learning

ASSOCIATED PERSPECTIVE: Instructional Delivery
[Student Experience]

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is collected syllabus material which must be coded manually to reflect the presence of appropriate library or other research-related independent projects. Typically, these will be present in the assignments given to students, and it may be appropriate to set a minimum criterion for inclusion based on the number or such practices or the proportion of a student's grade that such exercises represent. Calculation of the statistic then is based on a simple ratio between courses containing such practices and the total number of courses. Because of the difficulty of accomplishing such coding, the indicator might be calculated only on the basis of a random sample of classes, or for classes that meet particular criteria (e.g., 100-level, offered for general education credit, etc.). If a student self-report is used in addition, the recommended data source is additional items included in an end-of-course evaluation survey administered to all enrolled students. A suggested question text is, "With the exception of studying and doing reserve reading, about how many times did you visit the library this term to find out something that you needed to know for this class?"

REFERENCE NUMBER: 5.C.a.1

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INDICATOR: Percentage of faculty reporting giving students credit for active participation in classroom discussions.

DESCRIPTION: This is intended to be an indicator of the degree to which faculty formally encourage participation in class discussions in evaluating student performance. Because it is presented in the form of a self-report, it should be treated with caution as actual practice may differ from what is reported. As a result, it might be cross-validated by a parallel statistic collected from students in an end-of-course questionnaire.

ASSOCIATED "GOOD PRACTICE": Active Learning

ASSOCIATED PERSPECTIVE: Instructional Delivery
[Student Experience]

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a survey administered periodically to instructional staff. A suggested question text is, "In your classes this year, did you give any grade credit to students for active participation in class?" If the alternative of an item on an end-of-course evaluation questionnaire for students is used, a suggested question text is, "Did the instructor in this class require you to participate actively in class discussions and was the degree or quality of your participation counted as part of your grade?"

REFERENCE NUMBER: 5.C.c.1

INDICATOR: Average number of items checked out of the library by undergraduates per undergraduate student.

DESCRIPTION: This is intended to provide an indirect indicator of the degree to which students are engaged in independent reading, whether related or not to course assignments. Because it reflects only a single source of reading materials, it is inherently limited in scope—excluding student purchase of books and use of other library and information resources. Nevertheless, it may provide a reasonable benchmark of an important student activity.

ASSOCIATED "GOOD PRACTICE": Active Learning

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is library records, and requires materials checked out to be individually identifiable as to whether these students are enrolled as undergraduates. If circulation can be so identified, the calculation of the statistic is a simple average of items checked out divided by the total number of enrolled undergraduates calculated on a headcount or FTE basis. Alternatively, appropriate ranges of the number of items checked out could be constructed--e.g., none, less than five, etc. In addition, if library records are kept by student number, the statistic can be constructed for different types of students—e.g., by program, level, or demographic characteristic.

REFERENCE NUMBER: 5.D.b.1

INDICATOR: Number of library computer searches or database log-ons initiated by undergraduates per undergraduate student.

DESCRIPTION: The intent of this indicator is to indirectly track active student use of the institution's information resources. It is indicative only, as no information is typically available about the actual content of such log-ons or searches. Construction of the indicator requires that such activity be individually identifiable by student when it occurs—a situation which may be the case for certain kinds of activities (e.g., computer network access) and not for others (on-line public catalog access in the library). On the other hand, the technology of such media may allow additional relevant data to be captured—for example the duration, complexity, and sophistication of searches initiated or executed.

ASSOCIATED "GOOD PRACTICE": Active Learning

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is library and other computer database records of access and use. If each access can be individually identified by student through an account or password, the statistic is calculated by determining the number of such instances per student, then dividing by the total number of undergraduate students counted on a headcount or FTE basis. Alternatively, a student self-report can be used, administered on an instrument such as a graduating student survey.

REFERENCE NUMBER: 5.D.b.2

INDICATOR: Percentage of students in a given class section reporting having asked at least two or three questions in class during the term.

DESCRIPTION: This is intended to be a direct measure of student classroom participation, which research suggests is closely related to active learning. As a self-reported measure, it should be treated with some caution but the statistic provides a relatively robust and easy-to-collect indicator of one of the most common student behaviors associated with active learning. The number of questions asked is arbitrary, and may be set appropriately at any level that discriminates effectively among students to reflect varying levels of actual participation.

ASSOCIATED "GOOD PRACTICE": Active Learning

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an additional item or items included in an end-of-course evaluation survey administered to all students enrolled in the course. A suggested question text is, "About how many times did you actively raise a question during class this term?"

REFERENCE NUMBER: 5.D.c.1

INDICATOR: Average number of pages of out-of-class writing assigned in courses in the humanities and social sciences.

DESCRIPTION: The intent of this indicator is to provide an overall estimate of the amount of writing occurring in appropriate courses—a direct indicator of ongoing practice of a key academic skill. In courses of this kind, considerable writing is also consistent with active learning. Because the source of the indicator is published syllabus material, the statistic may not directly reflect the actual amount of writing required for two reasons: additional assignments may be present and not documented in the syllabus, or they may be claimed in the syllabus and not actually practiced. Because of these drawbacks, the statistic should be interpreted with caution.

ASSOCIATED "GOOD PRACTICE": Ongoing Practice
Active Learning
High Expectations

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is collected syllabus material which must be coded manually to determine the amount of writing required. Typically, this information will be present in the assignments given to students. Calculation of the statistic then is based on a simple average of the approximate number of pages of writing required in target courses, divided by the number of courses. Because of the difficulty of accomplishing such coding, the indicator might be calculated only on the basis of a random sample of classes, or for classes that meet particular criteria (e.g., 100-level, offered for general education credit, etc.).

REFERENCE NUMBER: 6.C.a.1

INDICATOR: Percentage of students reporting that instructors in a given class held review or study sessions in addition to regular class time.

DESCRIPTION: This is intended as an indicator of the commitment of faculty to furthering student practice of learned skills and more general time on task. It might be usefully supplemented by an additional self-reported indicator on whether and how often students in fact participated in such activities.

ASSOCIATED "GOOD PRACTICE": Ongoing Practice
Time on Task

ASSOCIATED PERSPECTIVE: Instructional Delivery
Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an additional item or items included in an end-of-course evaluation survey administered to all students enrolled. A suggested question text is, "Did your instructor in this class hold extra study or review sessions in addition to regular class meetings, and how often did you participate in these sessions?"

REFERENCE NUMBER: 6.C.c.1

INDICATOR: Average number of hours per week reported as having been spent reading on one's own by graduating seniors.

DESCRIPTION: This is intended as an indirect measure of student out-of-class activities consistent with ongoing practice and academic time on task. While the reading that it addresses may or may not reflect academic content, considerable research suggests that reading itself—regardless of content—is related to overall academic achievement. As a further refinement, different types of reading might be distinguished—for instance by content (e.g., reading directly or indirectly associated with specific classwork vs. personal interest) or by type of material (e.g., books vs. periodicals and magazines). At the same time, research suggests monitoring an important alternative to independent reading: self-reported hours of watching television are generally a strong negative predictor of academic achievement presumably because of its impact on time on task (Astin 1992). As a self-reported retrospective measure, all such items are to be treated with caution.

ASSOCIATED "GOOD PRACTICE": Ongoing Practice
Time on Task

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is items included on a graduating student survey. A suggested question text is, "As an undergraduate, about how many hours per week did you spend reading on your own beyond what was actually assigned in your classes?"

REFERENCE NUMBER: 6.D.c.2

INDICATOR: Average number of graded assignments or exercises given per course.

DESCRIPTION: The intent of this indicator is to provide an overall estimate of the distinct number of assignments given to students in a given course. Larger numbers of assignments imply more frequent feedback given to students, as well as providing more opportunity to practice learned skills. Because the source of the indicator is published syllabus material, the statistic may not directly reflect the actual number of assignments for two reasons: they may be present and not documented in the syllabus, or they may be claimed in the syllabus and not actually practiced. Because of these drawbacks, the statistic should be interpreted with caution.

ASSOCIATED "GOOD PRACTICE": Assessment and Feedback
Ongoing Practice

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is collected syllabus material which must be coded manually to determine the number of distinct assignments given to students. Calculation of the statistic then is based on a simple average of the approximate number of assignments required in target courses, divided by the total number of courses. Because of the difficulty of accomplishing such coding, the indicator might be calculated only on the basis of a random sample of classes, or for classes that meet particular criteria (e.g., 100-level, offered for general education credit, etc.). Alternatively, it might be calculated differently for distinct types of courses—for example counting the distinct number of graded writing assignments per course in freshman courses in the humanities or social sciences, or the number of graded tests and quizzes in freshman science and math courses.

REFERENCE NUMBER: 7.C.a.1

INDICATOR: Percentage of courses requiring a graded assignment within the first two weeks of the term.

DESCRIPTION: The intent of this indicator is to provide an indicator of faculty practices consistent with providing prompt feedback to students. Early quizzes or other exercises enable faculty to provide timely assessments of student performance needed for intervention or self-correction. Because the source of the indicator is published syllabus material, the statistic may not directly reflect the presence of such assignments for two reasons: they may be present and not documented in the syllabus, or they may be claimed in the syllabus and not actually practiced. Because of these drawbacks, the statistic should be interpreted with caution.

ASSOCIATED "GOOD PRACTICE": Assessment and Feedback

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is collected syllabus material which must be coded manually to determine the number of such assignments given to students. Calculation of the statistic then is based on a simple average of the approximate number of early-graded assignments, divided by the number of courses. Because of the difficulty of accomplishing such coding, the indicator might be calculated only on the basis of a random sample of classes, or for classes that meet particular criteria (e.g., 100-level, offered for general education credit, etc.). Alternatively, a faculty self-report might be used; in this case the relevant indicator would be the percentage of faculty reporting such practices.

REFERENCE NUMBER: 7.C.a.2

INDICATOR: Percentage of courses allowing or requiring multiple drafts, re-writes, or re-submission of student work.

DESCRIPTION: The intent of this indicator is to examine the overall proportion of appropriate courses that allow or encourage writing practices consistent with providing extensive feedback to students on their performance. Because its source is published syllabus material, the statistic may not directly reflect the presence of such practices for two reasons: they may be present and not documented in the syllabus, or they may be claimed in the syllabus and not actually practiced. Because of these drawbacks, the statistic should be interpreted with caution. In addition, it can be cross-checked with student self-reports about the presence and use of such practices.

ASSOCIATED "GOOD PRACTICE": Assessment and Feedback
Ongoing Practice

ASSOCIATED PERSPECTIVE: Instructional Delivery
[Student Experience]

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is collected syllabus material which must be coded manually to reflect the presence of assignments requiring or allowing re-submission or revision. Calculation of the statistic then is based on a simple ratio between courses containing such practices and the total number of courses. Because of the difficulty of accomplishing such coding, the indicator might be calculated only on the basis of a random sample of classes, or for classes that meet particular criteria (e.g., 100-level, offered for general education credit, etc.). If a student self-report is used in addition, the recommended data source is additional items included in an end-of-course evaluation survey administered to all enrolled students. A suggested question text is, "Were you encouraged or required by the instructor in this course to revise or resubmit your work after he or she provided you with comments on how it might be improved?"

REFERENCE NUMBER: 7.C.a.3

INDICATOR: Percentage of students reporting that they generally receive graded assignments back from instructors within one week.

DESCRIPTION: This is intended as a direct measure of the promptness with which faculty provide students with feedback on their formally-submitted work. The time limit is arbitrary, and might alternatively be expressed in terms of elapsed class meeting periods. While based on a student self-report, the statistic provides what is probably the single best measure of overall commitment to the principal of frequent feedback.

ASSOCIATED "GOOD PRACTICE": Assessment and Feedback

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an additional item included on an end-of-course evaluation survey administered to all students enrolled in the course. A suggested question text is, "About how long did it generally take to get graded assignments back from your instructor in this class?"

REFERENCE NUMBER: 7.D.c.1

INDICATOR: Percentage of students reporting that the instructor systematically reviewed tests or assignments in class after papers were returned.

DESCRIPTION: This is intended as a direct measure of the commitment of faculty to the principal of providing one dimension of feedback—collective "coaching" of students on a common exercise. Although self-reported, students can be expected to provide information of reasonable accuracy. Additional items might be designed in parallel to examine student satisfaction with or their perception of the helpfulness of such in-class review procedures. At the same time, items reflecting such practices might be included on a faculty survey to determine the frequency with which faculty claim to engage in them.

ASSOCIATED "GOOD PRACTICE": Assessment and Feedback

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is additional item(s) included in an end-of-course evaluation survey administered to all students enrolled in the course. A suggested question text is, "About how often did the instructor in this class go over assignments or tests afterwards so that you could see and correct your mistakes?"

REFERENCE NUMBER: 7.D.c.2

INDICATOR: Percentage of students reporting that the instructor provided frequent specific comments on their own performances.

DESCRIPTION: This is intended as a direct measure of the commitment of faculty to the principal of providing individualized feedback directly to students. Although self-reported, students can be expected to provide information of reasonable accuracy. Additional items might be designed in parallel to examine student satisfaction with or their perception of the helpfulness of such comments. At the same time, items reflecting such practices might be included on a faculty survey to determine the frequency with which faculty claim to engage in them.

ASSOCIATED "GOOD PRACTICE": Assessment and Feedback

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is additional item(s) included in an end-of-course evaluation survey administered to all students enrolled in the course. A suggested question text is, "About how often did the instructor in this class provide you with specific comments on your performance intended to help you improve?"

REFERENCE NUMBER: 7.D.c.3

INDICATOR: Percentage of graduating students reporting that they received frequent comments and evaluations during their undergraduate careers, and that such feedback helped them to improve their performance.

DESCRIPTION: This is intended as an overall indication of the degree to which frequent feedback is practiced across the curriculum as a whole. Because it is a self-reported measure provided retrospectively, it may not accurately reflect the early years of study and will tend to blur distinctions among different types of courses. For this reason, additional indicators might be developed that break down such evaluations by types of courses (e.g., major field vs. general education, by level, or by discipline). Separate items might also be developed tapping the perceived frequency and helpfulness of instructor comments.

ASSOCIATED "GOOD PRACTICE": Assessment and Feedback

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a periodic survey administered to graduating students. A suggested question text for examining frequency might be, "In your classes as an undergraduate, about how often did you receive individual comments on your work from your instructors?" A suggested question text for examining feedback quality might be, "In your classes as an undergraduate, how would you rate the overall helpfulness of the comments that your instructors gave you?" In the latter case, a five-point rating scale is recommended.

REFERENCE NUMBER: 7.D.c.4

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INDICATOR: Percent of courses [by department, program] incorporating team projects or similar group learning experiences.

DESCRIPTION: This is intended as a direct measure of course designs containing collaborative features, as reflected in associated syllabi. Many examples of such features are possible, but their defining characteristics are that students are expected to work interactively and that results will be assessed for the team as a whole (although individual contributions may be assessed as well). Because the indicator is based on documentary records, it may contain two kinds of errors. First, plans for such efforts may not occur as described in syllabi. More likely, faculty may include such course features in their actual course delivery, but neglect to document them in their syllabi. As a result, this indicator should be used cautiously, and in conjunction with student reports on such curricular features.

ASSOCIATED "GOOD PRACTICE": Collaborative Learning

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a content analysis of course syllabi for the range of courses of interest. Courses should be coded for the number of instances of teamwork or group projects explicitly mentioned in the assignments contained in the syllabus. Alternatively, an indicator might be developed that reflects the proportion of each student's graded work that occurs in a team setting, and this proportion averaged across the range of courses of interest.

REFERENCE NUMBER: 8.C.a.1

INDICATOR: Percent of faculty reporting efforts to create group projects or "learning communities" in their classes.

DESCRIPTION: This is intended to create opportunities for collaborative learning and cooperation among students in their classes. As a self-reported measure, it should be treated with some caution, and should be cross-checked with student responses and/or other sources to confirm its presence. Also, such opportunities may be more difficult to create in certain kinds of classes, and this should be taken into account in interpreting the resulting statistics.

ASSOCIATED "GOOD PRACTICE": Collaborative Learning

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a periodic survey of instructional staff. A suggested question text is, "In your classes this [year, term] did you make any attempts to establish student study groups, 'learning communities,' or other formal opportunities for students to learn from one another?"

REFERENCE NUMBER: 8.C.c.1

80 BEST COPY AVAILABLE

INDICATOR: Percent of faculty using non-competitive grading criteria.

DESCRIPTION: This is intended as a direct measure of faculty attempts to apply cooperative practices to their assessment of students in the form of grades awarded and feedback provided. More specifically, the indicator rests on the distinction between traditional normative grading practices in which students are ranked against one another to produce a single "normal" distribution for the class, and "criterion-based" alternatives in which explicit fixed performance standards are established and students assessed against them individually. In the latter case, students are not ranked against one another and all (or none) of the students in a given class may achieve a given level. Because students are not competing against one another for a grade, the latter approach is generally strongly related to collaboration among students. As a self-reported measure, it should be treated with caution, but it is probably best gathered in this manner as students will likely be less aware of the particular philosophy of grading applied.

ASSOCIATED "GOOD PRACTICE": Collaborative Learning
Assessment and Feedback

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a periodic survey of instructional staff. A suggested question text is, "Which of the following best describes the way you assigned grades in your classes this year, a) ranking student performance in the class to achieve an approximately "normal" distribution of assigned grades, or b) assigning grades associated with specific mastery or competency levels without ranking students?"

REFERENCE NUMBER: 8.C.c.2

BEST COPY AVAILABLE

INDICATOR: Percent of students reporting participation in team projects or group study.

DESCRIPTION: This is intended as a direct measure of actual instances of student collaboration for a single course, as reported by students. Examples such cooperative activities may be many and include deliberately-designed opportunities such as team projects or "learning communities," and more informal student-initiated instances of cooperation such as study groups. Because the indicator is based on a self-report on a matter which has no stakes for students, it is likely to be a reliable measure of at least the frequency with which such practices occur. It will not likely be able to assess the quality of such occurrences or their contribution to learning.

ASSOCIATED "GOOD PRACTICE": Collaborative Learning

ASSOCIATED PERSPECTIVE: Student Experiences

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an additional item or items included in an end-of-course evaluation survey administered to all students enrolled. A suggested question text for formal course opportunities is, "Were any group or team projects assigned as a part of this course, and what was your level of participation in them?" A suggested question text for informal collaborative activities is, "Did you ever [or how many times did you] get together regularly with other students to study or prepare for this class?" Similar items might be constructed for inclusion in a survey of graduates; here a suggested question text is, "In the classes that you took as an undergraduate, about how frequently did you study or prepare assignments in collaboration with other students?"

REFERENCE NUMBER: 8.D.c.1

BEST COPY AVAILABLE

INDICATOR: Percent of graduating seniors reporting frequent informal conversations with academic content with fellow students.

DESCRIPTION: This indicator is intended to provide an overall measure of the frequency of conversations about academic topics occurring in the student population. Though very general, it can provide a useful benchmark for tracking the experiences of particular student populations. Similarly, separate measures might be created for general education and major field courses, for courses in particular disciplinary areas, or by year of study. An alternative to a single item here is a series of items in which students are asked to report their time spent engaging in particular activities.

ASSOCIATED "GOOD PRACTICE": Collaborative Learning

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is appropriate items on a graduating student survey. A suggested question text is, "In your classes as an undergraduate, about how often did you have conversations with other students regarding topics that came up in your classes?"

REFERENCE NUMBER: 8.D.c.2

BEST COPY AVAILABLE

INDICATOR: Percentage of courses with a clear attendance policy.

DESCRIPTION: This is intended as an indicator of the degree to which requirements established by faculty encourage student time on task. Because the source of the indicator is published syllabus material, the statistic may not directly reflect the actual presence of such a policy for two reasons: it may be present and not documented in the syllabus, or they may be claimed in the syllabus and not actually practiced. Because of these drawbacks, the statistic should be interpreted with caution, and student self-reports might be used in addition.

ASSOCIATED "GOOD PRACTICE": Time on Task

ASSOCIATED PERSPECTIVE: Institutional Requirements
Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is collected syllabus material which must be coded manually to reflect the presence of a clear attendance policy. Calculation of the statistic then is based on a simple ratio between courses containing such policies and the total number of courses. Because of the difficulty of accomplishing such coding, the indicator might be calculated only on the basis of a random sample of classes, or for classes that meet particular criteria (e.g., 100-level, offered for general education credit, etc.). If a student self-report is used in addition, the recommended data source is additional items included in an end-of-course evaluation survey administered to all enrolled students. A suggested question text is, "Did the instructor require you to attend classes regularly and was attendance counted in your grade for this course?"

REFERENCE NUMBER: 9.B.a.1

BEST COPY AVAILABLE

INDICATOR: Average student course-load enrolled for.

DESCRIPTION: This is intended as a rough measure of student commitment to completing a curriculum and investing time in education. It is important to emphasize that differences in course load may occur for many reasons, not all of them under the control of the student. Nevertheless, considerable research demonstrates that students enrolling for what approximates a full load generally experience quite different levels of persistence and kinds of experiences from those who do not. As a result, the indicator might be constructed with equal utility in terms of the proportions of students in particular credit-load ranges (e.g., three or fewer, three to nine credits, etc.) or simply in terms of a full-time/part-time breakdown.

ASSOCIATED "GOOD PRACTICE": Time on Task

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is the institution's registration records system for a particular term or academic year. The calculational procedure for this statistic is routine, and requires determination of the enrolled credit load at census date for each enrolled student during the period in question, averaged over the number of students enrolled for at least one credit.

REFERENCE NUMBER: 9.D.b.1

BEST COPY AVAILABLE

INDICATOR: Percentage of students reporting that they cut two or fewer meetings of a given class in the course of a term.

DESCRIPTION: This is intended as a direct measure of student commitment to a particular class. As a self-report, it is likely to be under-reported rather than exaggerated but is probably reliable as an indicator of relative student commitment. If actual attendance records are available, they might be used as a cross-check to self-reported data. An alternative might be to construct the indicator not in terms of the absolute number of class meetings, but rather in terms of the proportion of total class time that missed classes represent.

ASSOCIATED "GOOD PRACTICE": Time on Task

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an additional item to be included in an end-of-course evaluation survey administered to all students enrolled in the course. A suggested question text is, "About how many times did you cut or not attend this class during the term?"

REFERENCE NUMBER: 9.D.c.1

BEST COPY AVAILABLE

INDICATOR: Amount of time in a given class spent studying or working on class assignments.

DESCRIPTION: This is intended as a direct measure of student time on task associated with coursework. As a self-report, it is likely to be an overestimate of actual time invested, but experience suggests that it varies reliably with actual student investments. As a result, it is probably the single most useful statistic associated with this element of good practice. Class-by-class collection of such data might be usefully supplemented (or substituted, if resources are constrained) by items included in surveys administered to graduating seniors.

ASSOCIATED "GOOD PRACTICE": Time on Task
Ongoing Practice

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an additional item included on an end-of-course evaluation survey administered to all enrolled students. A suggested question text is, "Excluding classroom hours, about how much time did you spend per week doing reading and completing assignments for this class?" For graduating students, a suggested question text is, "As an undergraduate, about how many hours per week on average did you spend on assigned reading, homework, and the preparation of assignments?"

REFERENCE NUMBER: 9.D.c.2

BEST COPY AVAILABLE

INDICATOR: Percentage of available library study spaces occupied by students in the period 5:00-9:00 P.M.

DESCRIPTION: This is intended as an unobtrusive indicator of student out-of-class study activities that can be easily collected on a sample basis. As an unobtrusive method, it is subject to considerable limitations of interpretation: students may in fact be engaged in considerable study work in residence halls and at home that would not be revealed by such inspection. Interpretations may also be asymmetric: empty study spaces does not necessarily mean low time on task, but full ones (in relation to enrollment size, of course) probably suggest high levels of student investment.

ASSOCIATED "GOOD PRACTICE": Time on Task

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is periodic direct inspection of the library and/or other public study spaces for students. The statistic itself is constructed as a simple ratio between the number of students working in such spaces and the total number of such spaces. Alternatively, the denominator might reflect total student enrollment. Inspection of this kind should occur on a rotating sample basis, ensuring that different evenings of the week are monitored, and perhaps covering different points in the term.

REFERENCE NUMBER: 9.D.d.1

BEST COPY AVAILABLE

INDICATOR: Percentage distribution of undergraduate students by race and gender.

DESCRIPTION: This is intended as an overall contextual measure of opportunities for students to experience diverse perspectives through peer contact. Although suggestive as a general benchmark, to be truly useful it should be compiled on a program or discipline basis.

ASSOCIATED "GOOD PRACTICE": Respect Diversity

ASSOCIATED PERSPECTIVE: Resource Investments

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is the institution's registration records system for a given term or academic year. The statistic is a straightforward calculation of the proportion of students falling within particular categories on a headcount basis.

REFERENCE NUMBER: 10.A.b.1

BEST COPY AVAILABLE

INDICATOR: Percentage of courses requiring students to experience different learning styles such as listening, viewing visual material, etc.

DESCRIPTION: This is intended as a measure of the degree to which faculty emphasize student interaction with course content in a number of different learning modalities. At minimum, this might include a requirement to examine visual material, quantitative data, and oral presentations. Separate measures of the occurrence of each of these modalities might be examined, or a composite indicator developed that reflects the presence of several such modalities. Like similar indicators based on documentary evidence, error can occur in two ways. Practices reported in course descriptions may not in fact be present in course delivery, and the requisite behaviors may occur without being documented by faculty in the form of syllabus entries. As a result, such indicators should always be cross-validated by additional sources of evidence such as those provided by student self-reports.

ASSOCIATED "GOOD PRACTICE": Respect for Diversity

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an analysis of course syllabi for a range of courses of interest. Within each course section, assignments and presentations can be coded on the basis of types of learning experiences consistent with different learning styles, with the results compiled by type across course sections. Student self-reports and faculty surveys might also be used to construct similar indicators.

REFERENCE NUMBER: 10.C.a.1

INDICATOR: Probability that a given student will enroll in at least one class containing more than 20% of students drawn from a different ethnic group or background in his or her freshman year.

DESCRIPTION: This is intended as a more focused measure of the opportunity for contact among students of diverse backgrounds provided by the behavioral curriculum. As an overall measure, it can say little about the degree to which the implied opportunities of learning from diversity are either experienced or effectively harnessed. Nevertheless, it serves as an important contextual indicator for this arena of good practice because absent sufficient opportunities for contact, little else can occur.

ASSOCIATED "GOOD PRACTICE": Respect for Diversity
Early Years of Study

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this measure is the institution's registration records system, though considerable manipulation of base data will be required. Generating the statistic requires first that individual student demographic information can be linked to particular course enrollment records. If this match can in fact be accomplished, the calculation requires, a) determination of which set of classes each student in the target group (e.g., first year students) enrolled for, b) identification of the particular students enrolled in each course so identified, c) calculation of a demographic profile (excluding the student in question) for each course that the student enrolled for, d) application of a criterion of 20% of students other than the target student's own ethnicity, and e) determination of whether any classes in the student's record for the identified time period meet the criterion noted in d. The resulting statistic is the ratio between those students meeting the criterion and the total target student population. Alternatively, a student self-report might be used, either on an end-of-courses evaluation survey administered to enrolled students or on a graduating student survey.

REFERENCE NUMBER: 10.C.b.1

INDICATOR: Percentage of faculty reporting that they regularly use individualized or alternative forms of instruction to communicate course materials.

DESCRIPTION: The intent of this indicator is to reflect the overall incidence of faculty practices designed explicitly to communicate effectively with students drawn from different backgrounds or who learn in different ways. Examples of this practice are many, but might include the provision of alternate ways for students to demonstrate mastery of course materials such as examinations or hands-on projects and oral presentations, the provision that each student be required to demonstrate mastery in several ways, or a commitment to use alternative presentation or pedagogical formats suited to a range of different learning styles. As an instructor self-report, it is subject to the usual limitations. Faculty may report such practices but in fact not engage in them. Similarly, they may engage in such practices, but not recognize the fact that they are doing so. As a result, data drawn from this source should be cross-validated with additional evidence drawn from student self-reports and syllabus review wherever possible.

ASSOCIATED "GOOD PRACTICE": Respect Diversity

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a survey administered periodically to instructional staff. A suggested question text is, "In your classes this year, to what degree did you try to vary teaching methods and presentations, or to provide additional course material, in order to accommodate the needs of students who learn in different ways?"

REFERENCE NUMBER: 10.C.c.1

INDICATOR: Percentage of students reporting that they were encouraged to ask questions in class when they did not understand something.

DESCRIPTION: This is intended as a measure of the degree to which faculty create a classroom atmosphere that legitimizes questions arising from different points of view. As a self-reported measure, it does not capture the degree to which faculty act on such information but it represents a good overall indicator of faculty willingness to seek feedback from students about whether presented material is being effectively communicated to students who may come from a variety of backgrounds and learning styles. Consistent with this, a parallel indicator might be faculty practice of explicit "classroom research" techniques designed to tap diverse student perceptions and approaches to learning (Angelo and Cross 1993).

ASSOCIATED "GOOD PRACTICE": Respect Diversity
Active Learning

ASSOCIATED PERSPECTIVE: Student Experience
[Instructional Delivery]

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an additional item on an end-of-course evaluation survey administered to all enrolled students. A suggested question text is, "Did the instructor in this class encourage you to ask questions in or after class when there was something that you did not understand."

REFERENCE NUMBER: 10.D.c.1

INDICATOR: Percentage of students reporting that the grading and evaluation procedures used by the instructor allowed them to actually demonstrate what they knew.

DESCRIPTION: This is intended as a measure of student perception of the degree to which the instructor's (and/or the institution's) assessment practices reflect diverse ways of demonstrating mastery. As a student self-report, it is subject to considerable limitations because students may attribute unfavorable instructor assessments to simple lack of understanding of their own points of view. Nevertheless, as a contextual measure, this indicator is useful as a benchmark of the degree to which faculty and student perceptions of achievement coincide. Where they do not, additional investigation as to whether faculty have in fact examined diverse ways of demonstrating mastery of course material may be warranted.

ASSOCIATED "GOOD PRACTICE": Respect Diversity

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator as an additional item on an end-of-course evaluation survey administered to all students enrolled. A suggested question text is, "Did the grading and evaluation procedures used in this course allow you to fairly demonstrate what you learned or could do related to the topics covered?"

REFERENCE NUMBER: 10.D.c.2

INDICATOR: Percentage of graduating students reporting that their undergraduate experiences reflected a concern and appreciation for diverse backgrounds and perspectives.

DESCRIPTION: This is intended as an overall measure of student perceptions of the degree to which the institution encourages a respect for alternative viewpoints.

ASSOCIATED "GOOD PRACTICE": Respect for Diversity

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this procedure is an item or items included on a graduating student survey. A suggested question text is, "In the courses you took as an undergraduate, did your instructors use varied methods to get the material across, or did they all teach in pretty much the same way?"

REFERENCE NUMBER: 10.D.c.3

INDICATOR: Faculty advising load [by program or department].

DESCRIPTION: This is intended as a direct measure of a standard faculty opportunity to interact with students. Large numbers of advisees per instructor will tend to degrade the quality of the advising encounter, absent other factors. Because this is a statistic derived directly from institutional records, however, there is no way to determine the quality of advising in situations where the numbers could allow it to occur. Benchmarks for this indicator are best set internally, based on institutional experience. Where advising loads exceed thirty students per faculty member, however, student/faculty encounters of this kind will probably begin to suffer.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Resource Investments

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is the institution's student records system—provided that this system contains data elements that identify each student's advisor. Absent such data elements, compiling the indicator will probably require accessing the records of individual departments or academic programs. The construction of the indicator is straightforward and consists of a simple ratio between the number of instructional staff engaged in advising students and the number of advisees. Adjustments to the calculation might use FTE equivalents for counting faculty. Also, the statistic is probably most useful when broken down by program or department. Alternatively, an item on a faculty survey might be constructed.

REFERENCE NUMBER: 11.A.b.1

INDICATOR: Average number of undergraduate students enrolled in a program or major per full-time equivalent faculty assigned to that program or major.

DESCRIPTION: This is a general measure of the overall potential for meaningful student/faculty contact within a given program or department. Because it says nothing about actual faculty deployment or student behavior, it should be considered nothing more than an indicator of the potential for such contact. It is useful at the major field level principally as an indicator of advising load. If the ratio is very high, the likelihood of high levels of contact is low no matter what the institution's policies may be.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Institutional Requirements

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is regular institutional registration records for a given term or academic year. The calculational procedure used is conceptually straightforward, but may allow many variations. The most common is to count students majoring in the program on a headcount basis, and numbers of available full-time faculty on also on a headcount basis. An alternative for the latter is to only include those faculty who have an assignment that affects undergraduate students (teaching or advising), or to construct an FTE measure based upon actual assignments to these functions. If the latter is used, part-time faculty members might also be included in the ratio.

REFERENCE NUMBER: 11.B.b.1

INDICATOR: Average section size (excluding independent study sections) by program or level.

DESCRIPTION: This indicator is intended as a very general measure of the potential for student/faculty contact occurring. Because it does not reflect actual faculty or student behavior, it is highly indirect. Also, as a central tendency measure, it is unable to reflect the fact that some very small sections may in fact be available to students, masked in the overall average. Against this, it is a very straightforward statistic to calculate, and can easily be obtained from existing institutional records. This indicator is most useful when it is used to describe a particular subset of sections offered rather than being calculated for the institution as a whole. For example, it might be beneficially constructed for individual departments or programs, for broad categories of courses (e.g., those counting for general education credit in general or in a particular distribution area), or for level of offering (e.g., first-year 100-level, intermediate 200/300-level, etc.).

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact
Collaborative Learning
Assessment and Feedback

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is regular institutional registration records for a given term or academic year. The calculational procedure used is straightforward, and involves determining the total number of course registrations occurring within the domain of interest (e.g., a particular department's courses, all 100-level courses, all courses counting for "social science distribution" within the institution's general education requirements, etc.) and dividing this number by the total number of sections offered within the same domain. Any sections that are clearly intended as independent study or that involve other one-on-one contact (e.g., music lessons, required practice interviews, etc.) are typically excluded from the calculation—though it may be of interest to construct an indicator that reflects only these types of faculty/student interactions. This requires such sections to be identifiable by code or number within the institution's registration or student records system.

REFERENCE NUMBER: 11.C.b.1

INDICATOR: Percentage of sections offered with fewer than X number of student enrollments [by program or level].

DESCRIPTION: This indicator is intended as a more precise measure of the potential for student/faculty contact than average section size. Like average section size, however, it is only a measure of such possible contact and does not reflect either faculty or student behavior. Like average section size, it is most useful when it is calculated for a particular subset of courses—for example those offered by a particular department, required for a particular program, reflecting a given requirement (e.g., an identified area of general education distribution), or offered at a particular level. The number set as a criterion can vary, but given the intent to indicate favorable opportunities for student/faculty contact, should not exceed twenty students and should most fruitfully be set at fifteen students.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is regular student registration records for a given term or academic year. The calculational procedure used is similar to that employed for average section size and involves, a) determining the total number of course sections within the domain of interest, b) determining the number of these with enrollments of less than X students and, c) dividing the number meeting the enrollment criterion by the total number within the domain of interest. As in the calculation of average section size, it is best to exclude "independent study" and similar sections from this calculation and if this is to be accomplished, a code or section identifier is required to flag these courses.

REFERENCE NUMBER: 11.C.b.2

INDICATOR: Percent of faculty knowing at least half of the students in their classes by name by the end of X weeks into the term.

DESCRIPTION: This is intended as a measure of the effort faculty have invested in becoming personally knowledgeable about their students. Because it is a self-report, it should be treated with some caution and it does not reflect the frequency or quality of student/faculty contact. Nevertheless, it is a reasonable indicator of at least a minimum level of faculty investment. Faculty reports can be taken at any time during the term so long as the snapshot is on a consistent basis, but will be most indicative within the first third of the term—probably within the first two weeks. An analogous indicator might be constructed on the basis of student self-reports taken at the end of the term.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a periodic survey of instructional staff. A suggested question text is "About what proportion of the students whom you are teaching this year would you recognize and know by name outside of class?"

REFERENCE NUMBER: 11.C.c.1

INDICATOR: Percent of faculty reporting involvement with a student club or organization.

DESCRIPTION: This is intended as a self-reported measure of faculty engagement with students outside the classroom. Because it is a self-report of an activity for which faculty may or may not keep records, it is an approximation only. Nor does it directly reflect the degree of actual contact or mentoring which may take place in these settings.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a periodic survey of instructional staff. A suggested question text is, "Did you participate formally or informally in any student clubs, organizations, or other groups this year?"

REFERENCE NUMBER: 11.C.c.2

INDICATOR: Average number of hours/week spent advising or meeting with students on academic matters.

DESCRIPTION: This is intended to reflect the level of faculty effort expended on out-of-class contact with students. It is a self-reported measure, and therefore does not reflect either "customer" reactions and satisfactions, or the ultimate quality of the encounter. It should also be used in conjunction with advisee load to determine if high values for this indicator are associated with large numbers of students to be served, or rather with significant contact with individual students.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a periodic survey administered to instructional staff. A suggested question text is, "In addition to classroom teaching, preparation, and grading assignments, about how many hours per week did you spend advising or meeting with students on matters related to their academic work this year?"

REFERENCE NUMBER: 11.C.c.3

INDICATOR: Percent of students reporting after-class conversations on academic subjects with faculty members.

DESCRIPTION: This is intended as a relatively direct measure of actual student/faculty interaction in the most frequent setting for such encounters. Reported on a class-by-class basis, it is probably the single best measure available for assessing such contact.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Student Experiences

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is as an additional item on an end-of-course evaluation survey administered to all students enrolled in the class. A suggested question text is, "About how many times during the term did you stay after class to make a comment or to ask the instructor a question?"

REFERENCE NUMBER: 11.D.c.1

INDICATOR: Percentage of students reporting having visited faculty during established office hours.

DESCRIPTION: This is also intended as a direct measure of the frequency of student/faculty contact in a common setting for such contact. It is a self-reported indicator intended to be collected on a class-by-class basis.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Student Experiences

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is as an additional item on an end-of-course evaluation survey administered to all students enrolled in the class. A suggested question text is, "About how many times during the term did you see your instructor in his or her office to discuss a topic related to this course?"

REFERENCE NUMBER: 11.D.c.2

INDICATOR: Average rated quality of out-of-class contact with faculty.

DESCRIPTION: This is intended as a "customer rating" of the quality of student/faculty interaction collected directly from students on a class-by-class basis. While a measure of student satisfaction, it is not necessarily a measure of the educational efficacy or actual impact of any such contact.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Student Experiences

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is an additional item on an end-of-course evaluation survey administered to all students enrolled in the course. Rating on a five-point scale with an additional "not applicable" category is recommended. A suggested question text is, "How helpful did you find any out-of-class discussions that you may have had with the instructor about this course?"

REFERENCE NUMBER: 11.D.c.3

INDICATOR: Overall frequency [and quality] of out-of-class contact with faculty in the total undergraduate experience.

DESCRIPTION: This is intended as a summary retrospective measure of student/faculty contact collected from graduating seniors. Like other self-reported measures of this kind, it constitutes a good indicator of "customer satisfaction" but may be less reliable as a measure of the efficacy of such contact. Because it is a recollected item, it is less reliable than collecting similar data on a class-by-class basis but is easier to obtain. A useful variant might be to construct separate sets of items for general education and the major field, or for selected departments.

ASSOCIATED "GOOD PRACTICE": Student/Faculty Contact

ASSOCIATED PERSPECTIVE: Student Experiences

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is through items included on a graduating student survey. A suggested question text for assessing frequency is, "In addition to your classes, how often did you generally have a conversation with a faculty member on an academic topic." For rating quality, a five-point scale should be used together with a "not applicable" category, and a suggested question text, "Throughout your undergraduate experience, how would you describe the quality of your interaction with faculty members outside the classroom?"

REFERENCE NUMBER: 11.D.c.4

INDICATOR: Ratio of instructional expenditures per FTE student associated with 100-level [or lower-division] courses with that for all courses.

DESCRIPTION: This is intended as an indirect measure of the level of resource investment made by an institution or program in the early years of study. Because it is a measure of investment only, it does not address the degree to which effective educational practices were actually used or if student experiences were in fact different as a result of such expenditures. Nevertheless, it remains a straightforward and highly credible indicator of institutional or program commitment.

ASSOCIATED "GOOD PRACTICE": Early Years of Study

ASSOCIATED PERSPECTIVE: Resource Investments

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is the institution's registration records system together with expenditure records in the form of an instructional cost study. Absent an existing cost study rubric, construction of the measure is complex and requires, a) identification of the costs associated with each course section through individual faculty assignment and the proportion of salary, b) identification of any additional costs associated with the class, and c) determination of the number of credits produced by the section. Calculation of the statistic requires dividing the cost by the total FTE associated with the course section for 100-level [or lower-division] courses and comparing the result with a parallel statistic constructed for all courses.

REFERENCE NUMBER: 12.A.b.1

INDICATOR: Proportion of 100-level [or lower-division] courses taught by full-time, tenure-track faculty.

DESCRIPTION: This is intended as a direct measure of the institution's relative commitment of instructional resources to the early years of study. As such, it is highly credible to external audiences despite the fact that it may or may not reflect heightened effectiveness absent additional investments in pedagogy on the part of regular faculty. Nevertheless, because it is easy to collect and directly references institutional commitment, it remains probably one of the most effective single indicators associated with this "good practice" domain.

ASSOCIATED "GOOD PRACTICE": Early Years of Study

ASSOCIATED PERSPECTIVE: Instructional Delivery
Use of Resources

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is the institution's registration or student records system for a given term or academic year. Construction of the indicator requires, a) identification of all course sections delivered at the 100-level [or lower-division level], b) determination of the instructor associated with each section, and c) classification of the instructor as appropriate. The resulting statistic is the proportion of classes within the identified domain taught by a regular faculty member. Accomplishing this calculation will require the ability to cross-walk course records with faculty data.

REFERENCE NUMBER: 12.C.b.1

INDICATOR: Probability of first-time freshman enrolling in at least one course section with X or fewer students.

DESCRIPTION: This indicator is intended as a direct measure of the effectiveness of an institution's emphasis on the early years of study. At the same time, it is a further measure of the potential for student/faculty contact within the curriculum. The emphasis of the indicator is on measuring real behavioral opportunity rather than simply the deployment of resources. As such, it might be constructed for any student subpopulation including demographic groups (e.g., minority students, students deficient in writing skills) or groups based on the student's interaction with the institution (e.g., transfer students, upper-division students, or students enrolled in particular majors or programs). Given a sufficient database, it might also record the number of instances of such small-class enrollments over an entire undergraduate career. As in previous examples, the measure would typically exclude independent study sections and the criterion might be set at any level. Constructed as shown, it is also an indicator of investments consistent with an additional good practice—the potential for collaborative learning.

ASSOCIATED "GOOD PRACTICE": Early Years of Study
Student/Faculty Contact
Collaborative Learning

ASSOCIATED PERSPECTIVE: Instructional Delivery

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is existing institutional registration or student records for a given set of terms or academic years. Constructing the measure is complex, however, and requires, a) identifying the student population of interest (for example, an entering cohort of first-time freshmen), b) determining the specific course sections enrolled in by each member of the identified population during the specified time period through transcript records, c) determining the total class size for each course section so identified, and d) flagging students who meet the set criterion of enrolling for at least one course at or below the established limit, and e) calculating the required probability by dividing the number of students meeting the criterion by the total number in the subpopulation. Accomplishing this calculation will require the ability to cross-walk course enrollment and student demographic data files—a capability not always present.

REFERENCE NUMBER: 12.C.b.2

INDICATOR: Percentage of first-year students reporting participation in a comprehensive and helpful orientation or advising program.

DESCRIPTION: This is intended as a measure of the actual coverage and participation in any programs designed explicitly to enhance the success of first-year students. Examples of relevant activities under this heading might include formal "freshman year experience" programs, pre-enrollment orientation programs of significance (e.g., more than two days in duration and/or with multiple occurrences across the first year), advising sessions designed explicitly to ease the transition to collegiate life, etc. The indicator is based on student self-report, but an alternative approach is to actually examine the presence of and participation in such activities through institutional records. Given that a self-report is used, moreover, items might be constructed that reflect not only participation in such activities but also the frequency with which ongoing advisement occurred throughout the first year, and/or student ratings of its quality or helpfulness.

ASSOCIATED "GOOD PRACTICE": Early Years of Study

ASSOCIATED PERSPECTIVE: Student Experience

RECOMMENDED DATA SOURCE AND/OR CALCULATIONAL PROCEDURE: The data source for this indicator is a questionnaire administered to first-year students. A suggested question text is, "What specific activities were available to you, in which you participated, that were designed to introduce you to the college and get you started successfully with your academic work this year?...How helpful did you find participation in each of these activities?"

REFERENCE NUMBER: 12.D.c.1

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